

# AMERICAN VETERINARY REVIEW.

NOVEMBER, 1911.

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## EDITORIAL.

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### EUROPEAN CHRONICLES.

PARIS, September 15, 1911.

FOOT-AND-MOUTH DISEASE.—I did not intend to take part of one of my chronicles to speak of the extensive outbreak which, since some months, has gradually spread all over Europe, nor do I intend to say much about it even now; and yet, I feel that I would not do justice to the objects of my monthly writings if I should let this general outbreak to go by without being noticed. All the veterinary journals speak of it more or less. Of course, it prevails in their country. And not only this press, but the agricultural and the daily papers have lent the hospitality of their columns for publications on foot-and-mouth disease.

This outbreak, however, presents nothing peculiar except its extent. It runs its ordinary course as usual; it gradually and insidiously spreads from one place to another, from one farm to another, from one state to another, and to-day it may be said that there is not one part of old Europe (with rare exceptions), which does not register its presence in its official sanitary bulletins. As an evidence to this, I may present the information obtained from the *Veterinary News* in relation to certain diseases of animals which are prevailing in some countries and from which I merely extract those where foot-and-mouth disease is found, and from those only five states are found free from infection.

Austria is mentioned with 7,952 animals affected; Belgium with 1,464 infected centres; France with 3,958; Germany with 20,793; Holland with 18,241 outbreaks; Hungary with 7,480; Italy with 1,549, outbreaks involving 29,540 animals; Russia with 77,126 cases in 1,350 communes; Servia with 139 cases in four arrondissements; Switzerland with 17,879 animals. At last report, England's sanitary returns reported only 8 outbreaks with 425 diseased animals. Bulgaria is also infected; to what extent is not stated. Denmark, Norway, Roumania, Spain and Sweden at this last report were free from disease.

The above record shows indeed what enormous foothold the disease has taken this year in Europe, making undoubtedly a record of unusual extent to the credit of this plague.

So far England, with the severe measures prescribed by Governmental regulations, has, in comparatively short notice, effectually succeeded in protecting herself from extensive spreading, and it is certain that she will, with no difficulty and at comparatively small expense, free herself again on this occasion. Her stamping-out process has always been a success and will again. Of course, for European countries it is a method which cannot be applied, not only because it would prove too expensive but also because it would be necessary to resort to it too often so long as sanitary measures applicable all over do not exist or will not be enforced. And even then, there is yet so much to be learned in relation to the whole pathology.

America is now free from foot-and-mouth disease. How long will she be? Anyhow, the sanitary measures of the Bureau of Animal Industry will soon get rid of it, should it by chance or bad luck find its way across the Atlantic.

It may not be impossible, so, Doctor Melvin, look out!

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If it should, however, there is a satisfactory consolation. It is the fact that what has occurred lately in France will certainly not take place in America. It may not be very necessary to



allude to what has taken place here lately, but as it has a lesson in it I may as well point it out.

As in all cases of the presence of any epidemics, it is frequent all over the world, I imagine, to see numerous panaceas proposed to relieve, cure and prevent the attack for either men or animals. Such, of course, has been done here with foot-and-mouth disease; and I mention it as it might find its way to America and some of our people be induced to neglect the sanitary regulations of the bureau and try the wonderful cure. Who knows, as it is claimed to cure almost all the diseases of living creatures—I should not be surprised if even at this hour my warning will not be useless.

I refer to a certain preparation sold under the name of Pamphagine under the form of a phagogeneus liquid, which has been introduced, patronized and boomed by a surgeon in Paris, who has a certain reputation as such in America, Doctor Doyen. The experiments which the doctor has had the opportunity to carry out have failed to give the results promised; and notwithstanding all the noise made through the press, it has received many hard and fatal blows, among which I pick out the following, in the shape of resolutions addressed to the authorities of the sanitary board by a sanitary departmental veterinarian. It says: (1) The phagogeneus liquid does not confer immunity; (2) it does not seem to shorten the duration of the disease; (3) the accidents to the feet, which are accompanying aphthous fever, are as frequent and serious as those observed on animals treated with ordinary methods; (4) numerous animals injected with the liquid have often had enormous swellings requiring long and costly treatment and which sometimes were followed by rapid and fatal terminations.

These conclusions were confirmed by many others similarly.

The question is settled as far as the value of this treatment. But how is it that it should have been allowed to be tested so extensively as it has, without any scientific control, without being stopped from the start as long as the sanitary laws in France forbid anyone from treating animals affected with contagious

diseases unless he be a veterinarian and, I believe, a sanitary veterinarian at that?

I believe such rules exist also in other countries where sanitary laws prevail; certainly it does in America; but in France, unfortunately, there is no law regulating the practice of veterinary medicine, no law protecting veterinarians, and anyone can treat animals—and, it seems, even contagious diseases—although it is against the law!

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TRYPANOSOMES AND TRYPANOSOMOSEs.—The literature on this subject is very abundant; so much so, indeed, that unless directly interested in it, the scientist may have difficulty to collect all the new facts which, since late years, have found their place among those already established. It was to remedy this that Prof. G. Marotel has published in the *Journal de Zootechnie* a concise review of several points relating to these parasites and the diseases due to them, namely, upon the evolution of the parasites, the principal and satellic physiological species, their pathogenous action, diagnosis and treatment. First a few words are said of the morphology of the trypanosomes. They are protozoas provided with a floating membrane, a flagellum and a posterior centrosome. Almost all live as parasites in the plasma of the blood of vertebrates. Their body, microscopic, fusiform, often bent or tortuous, is essentially composed of a *protoplasmic* mass, of an oval submedian *nucleus* of a laterial *undulating, floating* membrane, more or less twisted helice-like, and finally of a *flagellum*. This last seems to be inserted at the anterior extremity, but in reality it follows the border of the floating membrane and ends in the neighborhood of the posterior extremity, on a small nucleus called *centrosome* or *blepharoplast*.

In relation to their evolution, trypanosomes multiply by a *sexual* process, in the blood, by equal or unequal *longitudinal bipartitions*. The division begins about the same time in the centrosome and the nucleus, then progresses from backwards for-

wards to the undulating membrane and the flagellum; it is then that the protoplasmic body is progressively divided in two by a longitudinal slit. Generally there is no reproduction by *multi-partition*.

*Sexual reproduction is not yet known* although recent works indicate that there is one. Trypanosomes, indeed, are like Hemosporidae, inoculated by bloodsucker insects. And the experiments of Kleine have demonstrated that flies contaminated by a sick individual may, after having been infecting during the hours that follow, then stop being so, to become so again from fifteen to thirty days after and remain dangerous for a month or two. This fact of transmission at long intervals shows evidently the existence of an incubation, of a probable evolution of the protozoa in the body of the insect, incubation corresponding to the duration of the evolution in the fly, from the moment of its infection to that of its passage through the trunk of the insect.

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There are numerous species of trypanosomes. Almost all parasites of the blood plasma of vertebrae, they are exaglobular hematozoas. Some fifteen of these species are pathogenous for man or domestic animals, to which they are inoculated by various bloodsucker insects and give rise to epizootic diseases extremely severe and fatal.

The distinction between these species is often difficult, as morphology allows only to differentiate five or six; but several forms, apparently identical, are nevertheless considered as specifically distinct, because their physiological properties are not the same, or because they are not pathogenous for the same animals, or, again, because they do not vaccinate against each other. However, six *morphological* species are recognized, round which a certain number of *physiological* have been grouped.

Among the former are: (1) *Tryp. Evansi* in the blood of all domestic mammalia, except the small ruminants; (2) *Tr. Equinum* the agent of cadera in equines; (3) *Tr. Congolense* patho-

genous for all domestic mammalia; (4) *Tr. Dimorphon* (*T. pectorum*, *T. confusum*) in all domestic mammalia of equatorial Africa; (5) *Tr. Theileri* in the blood of cattle, is but little pathogenous; (6) *Tr. Gambriense*, cause of the human trypanosomiasis, the sleeping sickness.

Among the satellite physiological species are grouped: (1) Those of the *Tr. Evansi* are: the *Tr. Brucci*, agent of the Nagana; (2) of the *Tr. equiperdum* agent of the Dourine among equines; (3) of the *Tr. Cazalboui*, the *Tr. Angolense* the agent of the Souma of equines and bovines; the *Tr. Soudanense*, agent of the tahaga of Camelidae; the *Tr. Togolense*, which attack the bovines of the Togo; the *Tr. Venezuelense*, the equines of Venezuela; the *Tr. vivax* in the ruminants of Cameroun; (4) of the *Tr. Congolense*, the *Tr. nanum* specific to bovines in the Soudan; (5) of the *Tr. Dimorphon*, the *Tr. Pecaui* agent of the baleri in mammalia of Senegal; the *Tr. Montgomeri* in cows of the Rhodesia; the *Tr. Hippicum* of mules in Panama; (6) of the *Tr. Theileri*, the *Tr. ingens* of cattle and antitops.

Among other forms there are: The *Tr. Lewisi* of blood of rats inoculated by lice and fleas; the *Tr. Americanus*, observed in cultures of blood from American cattle; the *Tr. tuniculi* of rabbits; the *Tr. Calmettei* found in hens; the *Tr. avium* in partridges and guinea hens; the *Tr. rotatorium* of frogs; the *Tr. granulorum* of eels; the *Tr. Ziemanni* and the *Tr. noctuae* of mosquitoes.

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Trypanosomes give rise to epizootics which are so much more serious that they are found in the whole world, and that for most of them they are likely to affect all the domestic animals indifferently. However, they are ordinarily less dangerous with small ruminants than with equines and bovines, especially these last, where the mortality has been seen to reach 80 and 100 per cent. of affected animals.

The principal symptoms are a fever, generally intermittent in character, anhemia, great loss of flesh, troubles of the circulation or of the nervous system.

The diagnosis is made by the microscopic examination of the blood or of the serosity of the external swellings. The parasites are found in the plasma and not in the globules. Several preparations must be made, as it often occurs that the parasites are only few. The method of cultures is also advisable. Made on artificial media, on gelose blood, bouillon blood, they are readily reproduced.

In relation to the treatment, three methods have been resorted to: 1. *Vaccination* which would be the ideal process, but is yet to be found. *Serotherapy* had promised much, but so far has given no results. 2. *The destruction of the agents of inoculation* has been advocated. The means are yet to be found to realize this. All that has been obtained in this direction is to chase, to expel them from the well-known regions where they inhabit. This might be successfully resorted to by cutting off or destroying the vegetation, bushes, etc., of the places where they gather. For *mechanical* protection of the animal, net and gauze coverings are indicated. 3. *The destruction of the parasites* can be obtained by the immediate and systematic slaughter of all diseased animals. Radical method less costly than the one of chemical drugs. Atoxyl, orpiment, tartar emetic, trypan-red, arsenophenylglycine, have some recoveries to their credit which have proved lasting and radical. Surra is the only one among the trypanosomoses which has resisted the most in being cured with certainty by orpiment, alone or associated to tartar emetic or atoxyl.

**WILLIAMS' OPERATION FOR ROARING.**—But a few days ago at the meeting of the American Veterinary Medical Association in Toronto, this important subject was the occasion for remarks and discussion which, by the program, I am informed, were to be treated by the father of the operation, Prof. Williams of Cornell, and by its principal propagandist, Prof. Hobday of London. It may not be too late to have France join America



and England on this occasion, and to that effect I send the conclusions that were offered at the last meeting in July of the *Societe Centrale de Medicine Veterinaire de Paris* by Mr. Drouin, the reporter of the committee appointed to examine a long communication presented by Dr. Williams to the effect of describing the operation, relating the whole history, experiments, final technics, results so far obtained, and so on, and finally his claim to the priority of paternity of the operation. The long paper offered to the society was addressed to me, and as president it was my pleasant duty to refer it to the examination of a committee composed of Profs. Cadiot, Almy, and Mr. Drouin, the reporter. I will not consider this report, which makes a close analysis of Williams' article, but will point out principally the conclusions relating to the priority claimed by Williams which can no longer be discussed.

Mr. Drouin says: "If Gunther has made allusion to the extirpation of the ventricular sac, he has given only a very brief description of his experimental trials, and it seems certain that he has had but little opportunities to apply it in practice, as in his most recent publications he acknowledges to have never used it but for demonstration. The operation does not reach its object and he advises tracheotomy. It would then appear greatly unjust to reproach Williams, as it has been done, to have merely copied Gunther. That he may have been inspired by reading of it, that he may have become acquainted with the unfinished attempts, nothing is more natural. But he has made of the operation that he *preconises* a well-defined operation, one which he has modified, has improved by many successive efforts and trials, and which, with all dues, deserves the name of '*Williams' operation.*' It is thanks to his persevering activity that the ablation of the laryngeal ventricles has become an operation of common practice in America as well as in England."

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But while Mr. Drouin gives Prof. Williams what is due him, he also takes the opportunity of giving his opinion upon some



points relating to the technic of the operation, opinion which is of great practical value, as may be seen by the following from the *Bulletins de la Société*.

Indeed, to be well acquainted with what difficulties the operation might present and to possibly appreciate its efficacy, Mr. Drouin, guided by the described technic, performed the operation several times and modified some of its steps, and says: "On the first of our cases operated, we had resorted to general anesthesia by peritoneal injection of chloral. But if one obtains great facility in the complete insensibility of the patient, there results from the use of chloral an hæmorrhage in sheet which is very troublesome. In the other operations that we performed we did not resort to general anesthesia, but only to *local insensibilization with a mixture of cocaine and adrenalin*. In these conditions the operation is much simplified, the field of operation remains almost bloodless, and the movements of the patient are very limited.

"What has appeared to us the most indispensable precaution has been to place a tracheotomy tube about the second day, if a constant watching during the night cannot be carried out. We nearly had a fatal accident for neglecting this measure. Dressings with peroxide only were resorted to. Recovery complete in a month."

In conclusion of his long report Mr. Drouin says: "Time only will permit a definitive judgment on the operation of Prof. Williams; but his work is one of those that do honor to our profession; the minutiae, the vigorous method in which every point of the report is presented, shows on the part of the author a constant desire of perfection which is the stamp of all inquirers. Your committee proposes, in addressing Prof. Williams its very great thanks, to enter his name on the list of candidates to membership of foreign correspondent.

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SEA PLASMA.—Under this name is known in France the injectable isotonic sea water whose special use is at present well

known. Indeed, by most severe analysis the absolute identity of the vital plasma of all the organisms in the entire zoological series with sea water has been well demonstrated, although it is well understood that between the sea plasma and the cellular plasma there is only an analogy of composition and not one of molecular concentration; the physical state is alone different.

To this special point of view of saline concentration of the cellular vital plasma, herbivora present this peculiarity, viz.: that to satisfy the physiological tendency of their tissues, these animals must maintain their internal medium to a normal stand of chloride of sodium with an alimentary supply extremely poor in sodium. The sodium supply is then constantly within the boundary of deficiency; as soon as this state is established, the organism is deprived of one of its indispensable chemical compounds and thus loses all its reactive power and means for struggling against morbid causes in general.

Under such conditions, say Messrs. Darbot and Augustin in the *Révue Générale* it is easy to understand that therapeuty, in resorting to injection of isotonic sea water or Sea Plasma, which has given such brilliant results in human medicine—where, however, the sodium proportion can be so easily kept up to normal by the mode of feeding—must be for veterinarians a very valuable assistant to increase the reacting organic power of the functions of their patients.

With this object in view they have used this mode of treatment in several instances and give the minute record of two—one in a rebel case of suppurative sinusitis, where they obtained a reduction and later entire disappearance of all the symptoms, but not radical as there was a relapse later, and another in a case of infectious meningo-myelitis following distemper in a dog, which recovered completely.

Besides these, the writers have made other trials with this mode of treatment which, while costly, they recognize will probably be resorted to only for animals of great value, and they think it is indicated: (1) in acute inflammatory diseases (pneumonia and pleurisy), in serious effections such as tetanus,

strangles, typhoid fever, pasteurellose, although its action is not specific in these diseases; (2) in suppurative diseases (sinusitis, various abscesses, extensive traumatisms), where its action is very manifest and improves all the symptoms; (3) in enteritis, where its action is specially specific; (4) during the convalescences of infectious diseases where the sequelae are often so dangerous for valuable animals, such as those of synovitis, rheumatismal myositis, irido-cyclitis after distemper or pasteurellose, meningo-encephalitis of dogs, etc.

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The technic of the treatment is simple. The sea water or plasma used in medicine is the water from the sea prepared by special method which is sold in glass tubes, similar to those where physiologic serum is kept.

Applied to large animals, the injections are made in the neck in front of the shoulder; careful antiseptic preparations of the surface are applied.

At one end of a fine rubber tube about two meters long the needle which will make the puncture is fixed. Both are sterilized by boiling. The straight point of the glass tube is broken and introduced in the other end of the rubber tube. The glass tube is secured about one meter and a half above the point of puncture. Then this extremity is broken and some of the contents are allowed to escape before the puncture is made. A saline taste of the running fluid tells that everything is ready for the puncture. It requires about half an hour for an injection of 500 c.c. The operation ended, the wound is dressed with a little collodion. The injection is perfectly painless. A slight reaction follows in twelve hours but soon subsides. Injections are followed by extraordinary condition (euphoria) characterized by quick movements, stimulated, lively physiognomy, frequent neighings, greater activity in working, increased appetite, more abundant urinary secretion.

Injections must be made every two or three days and kept up, beginning by small doses 200 or 300 c.c. the first week, to

reach 1,000 c.c., then reduce by degrees to 500, 300, and stop.

It is better not to arrest the treatment too soon.

This is a new method of treatment which, it is hoped, may give as good results as it has in human medicine.

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DR. J. G. RUTHERFORD.—The following appreciation from an English paper, the *Veterinary Record*, will prove gratifying to Dr. Rutherford. His precious qualities, professional ability and the value of his services have been brought to a sudden end for private causes. All his friends in the profession, in America, have regretted his voluntary retirement, and will read with interest the expressed feeling of our English *confrère*:

"Federal agriculture at Ottawa loses an invaluable servant through the resignation of Dr. J. G. Rutherford, Dominion Veterinary Director General, and Live-stock Commissioner. John G. Rutherford first saw the light of day in Peeblesshire, Scotland, having had the fortune to be born a minister's son. He was educated in Glasgow and arrived in Canada in September, 1875. Like so many of his countrymen, he found in the Dominion a field to develop his native calibre, and his career has been marked by a brilliant course of professional and administrative success. From 1889 to 1901 he practised veterinary medicine; was elected to the Manitoba Legislature in 1892, serving till 1896. In 1897 he was elected to the Dominion House of Commons. Subsequently entering the Department of Agriculture, he was in 1904 made Veterinary Director General and in 1906 was called to fill a dual capacity as Veterinary Director General and Live-stock Commissioner. In both spheres he has achieved conspicuous success. His work in suppressing contagious diseases of animals in the West and elsewhere has been thoroughgoing and proportionately successful. As Live-stock Commissioner he has succeeded in retaining the good will and respect of stockmen the country over, while serving their interests judiciously at every turn. At conventions his advice has

always been sought and almost invariably followed. As a veterinarian, he ranks among the most eminent in America. He was last year President of the American Veterinary Medical Association and was, if we mistake not, the prime mover in securing the appointment of the International Commission on Tuberculosis, on which he served most effectively."

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WILLIAM OWEN WILLIAMS, F.R.C.V.S.—Our English contemporaries have announced the death of this learned veterinarian. We may be permitted at this late hour to convey this sad news to our confrères of America, to whom the name of Prof. Williams is familiar by his contributions to English veterinary literature; and although the REVIEW has most certainly already addressed her sympathetic condolences to the family of Prof. Williams, I hope this following notice from the *Veterinary News* will convey to our readers the history of the professional life of our regretted colleague:

"Prof. Williams, F.R.C.V.S., F.R.S.E., was born in Bradford, Yorkshire, in 1860, he was the son of the late Prof. William Williams, Principal of the New Veterinary College, Edinburgh. It was at this college that Prof. W. Owen Williams received his first instruction in veterinary science, graduated in April, 1881, and supplemented his instruction at the Alfort Veterinary College, Paris. Returning to Edinburgh, he rejoined the New College, becoming hospital surgeon and demonstrator, then professor of veterinary medicine and surgery as applied to the ox, sheep, pig and dog, and finally principal in 1900. He was president of the Council of the Royal College of Veterinary Surgeons, 1902-4, and president of the National Veterinary Association in 1905-6. In 1904 he accepted the professorship of veterinary medicine and surgery in the University of Liverpool. From 1903, Professor Williams had been veterinary surgeon to the establishment of King Edward's and King George's stables. Prof. Williams was the author of many contributions to veterinary science. He edited a work on the "Principles and Practice of Veterinary Medicine and Surgery," had been editor of *The Veterinary Journal*, and revised Fleming's "Operative



Surgery," Vol. II. During the Boer war Prof. Williams acted as supervisor of horses sent out by the War Office.

"Professor Williams married, in 1885, Annie Christine, daughter of Mr. John Flint, of Glasgow, by whom he had two sons and a daughter. He had been in ill health for some days, and died suddenly, while talking to his son. His age was fifty-one years."

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BIBLIOGRAPHIC NOTES.—Two numbers of the *Archives des Sciences Biologiques de l'Institut Imperial de Medicine Experimentale* at St. Petersburg, have reached me.

In one, No. 3 of Volume 16, there appears: Contribution to the study of the influence of losses of blood upon the digestive process, by N. A. Dobrovolskain; Influence of experimental anemia upon the secretion and composition of bile, by V. G. Korentchevsky; Influences of biliary salts and their combination with enterokinasiò upon ferments from the pancreas, by the same; and Influence of infection upon the blood, by M. Zenkevitch.

In No. 4 of Volume 16, there is the continuation of Dobrovolskain's article in No. 3; Antirabid vaccination in St. Petersburg, by Dr. W. Kraouchkine; Bacteriological study of the mammoth of Sanga Jourach and of the surrounding soil, by V. L. Omeliansky; the reaction of the fixation of the complement during membranous pneumonia, by A. A. Tchowilina and N. T. Voedenskaia.

The *Agricultural Journal* of the Union of South Africa for June contains three popular articles of veterinary interest: Scab, its nature and treatment, by Mr. A. G. Davison; Actinomycosis, by Walter Jowett, F.R.C.V.S.; Feeding of equines, by J. M. Christy. In the number of July there is one article by R. W. Dixon, M.R.C.V.S., on East Coast fever, prevention and eradication; one by Dr. A. Theiler, C.M.G., on an infectious foot disease in sheep; and one by J. F. Dunning, M.R.C.V.S., on strangles.



The progress in the tuberculosis campaign in Pennsylvania up to 1911, by Lawrence F. Flick, M.D. The McKillip Veterinary College announcement for 1911-1912; and that of the Chicago Veterinary College, same session, are also here acknowledged.

A. L.

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### IMPORTANT EVENTS IN NEIGHBORING STATES.

Two important events have occurred that directly affect the sanitary conditions relative to animal food products in two states which border on either side of the one which is the home of the REVIEW, since we went to press with our last issue. One is the appointment in Connecticut of a veterinarian as "Deputy Commissioner on Domestic Animals," and the other is a movement on the part of veterinarians in several counties in Pennsylvania to co-operate with State Veterinarian Marshall in carrying through his plans in regard to the inspection of the 70,000 herds in the state.

Connecticut has been blessed in having as Commissioner on Domestic Animals for the past twelve years, a man of high principles and one well versed in the conditions and the needs in agriculture in general, and especially of that branch of it which deals directly with the live-stock interests. But it has had its own troubles in getting the proper recognition by the state authorities of the advantages to the commonwealth that would accrue from having a veterinarian directly connected with its sanitary work. Although the Hon. Heman O. Averill, who is the true and tried Commissioner on Domestic Animals of twelve years' standing, has *always* recognized the fact; and has, for the past eleven years, from time to time employed the services of Dr. B. K. Dow, of Willimantic (practitioner, lecturer at the Connecticut Agricultural College at Storrs, Secretary of the State Board of Examiners, and for ten years Secretary of the Connecticut Veterinary Medical Association), as expert, diag-

nostician, consultant, etc.; during which time the commissioner has learned the value of a veterinarian in connection with his work, and has realized how much better work his department could do with a veterinarian regularly connected with it. Therefore, when the legislature of Connecticut gave the Commissioner on Domestic Animals the power to "*appoint or remove at will*" a veterinarian as Deputy Commissioner, he appointed Dr. Dow (for whose opinion he had grown to have much respect) to fill that important position; and we feel sure that we voice the sentiment of the entire veterinary profession when we say that it is the most important step that has yet been taken in the interest of the live-stock industry of the State of Connecticut. Another point equally as important as the ability in the appointee recognized by the commissioner, is the fact that he is popular with the veterinary profession in his state, and will receive the support and co-operation in his work of every reputable veterinarian in Connecticut; which will contribute largely toward the successful performance of his duties as Deputy Commissioner, and materially benefit the cause in which he is working—the live-stock interest of the state.

Of the movement in Pennsylvania too much praise cannot be given. The organization and unity of motive of the veterinarians of that state are the marvel and admiration of all other states. They are always ready at a signal from their leader to line up and meet any emergency. And so, when Dr. C. J. Marshall, State Veterinarian, explained to some of the members of the State Live-Stock Sanitary Board that he was somewhat handicapped in carrying out his plan of inspection of the 70,000 herds in the state, owing to a deficiency in funds with which to pay veterinary inspectors to do the work, and they read disappointment in his countenance, they "got together" to devise some plan by which the work could go forward **as planned**. And, from the outcome of affairs, it is rather fortunate than otherwise that the State Veterinarian of Pennsylvania *is* temporarily short of funds; for, as a result of the meetings called in several counties to devise means to carry out the work, at least one, and

perhaps several, new veterinary associations have sprung into existence.

Schuylkill County was the first to organize for the work, then the Bucks County veterinarians came together at Doylestown on October 11, where they had been summoned by Dr. W. H. Ridge, of Trevese, a member of the State Live-Stock Sanitary Board. This conference resulted in the veterinarians of that county agreeing to take up the inspection of dairy conditions at a nominal sum, as they felt the work must go on, now that it had been taken from the State Department of Health and given over to the State Live-Stock Sanitary Board, appropriation or no appropriation; the work must be continued now that it had been begun. And before that conference broke up a new organization had been formed with a complete set of officers elected. Chester County followed suit on October 17 and Delaware County on the 18th; and by the time that this number reaches its readers, the veterinarians of Pennsylvania will be an organized force rallied about the State Veterinarian with a determination to see every dairy in that great state supplying at least cleaner milk, and in many instances clean milk.

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#### INCREASED EFFICIENCY IN THE ARMY VETERINARY SERVICE.

The following clipping from the *Army and Navy Journal* suggests that its author is *subject* to "moments of weakness"; in fact it is difficult to find any evidence of *strength* of character in a man who signs a recommendation one moment and desires to take it back the next; and we believe army veterinarians need have no misgivings on his account:

" COMMISSIONING VETERINARIANS.

" Fort Huachuca, Ariz., Aug. 30, 1911.

" *To the Editor of the Army and Navy Journal:*

" In a moment of weakness I signed a recommendation to commission veterinarians. It was cleverly worded, and increased

efficiency was the keynote of the composition. I do not believe that veterinarians would be any more efficient for commissions. Better give them a good stiff examination every year or two.

“RODMAN BUTLER, 1st Lieut., 6th Cav.”

If the gentleman had given the matter more careful study before signing the recommendation, he would not ask to retract, as he would know that the only way to increase the efficiency of the army veterinary service is to *encourage* those that are already in it and to *attract* veterinarians from the best veterinary schools, into the army. Our veterinary schools are graduating to-day men whose scientific training is equal to that of any medical officer in the army, and the moment they see themselves the medical officers' equal in other respects, the army will have attractions for them, and not until then. This fact, added to the new life and ambition infused into the faithful pioneers of the cause already in the service, by a recognition of their work, would do more, in our opinion, to increase the efficiency of the army veterinary service than anything else; except perhaps *An Army Veterinary Corps*, which we hope to see in the not too distant future.

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DR. WM. ANDERSON'S GOLDEN WEDDING.—In our correspondence department on page 262 of this issue, a report appears from Secretary Dell of the Southern Auxiliary, California State Veterinary Medical Association, to the effect that that organization commemorated, by resolutions, the golden wedding of Dr. and Mrs. Wm. Anderson, of Los Angeles; and states that the association also had the pleasure of entertaining at its banquet Dr. Charles Anderson, of Yonkers, N. Y., who had crossed the continent to be present at the golden wedding of his parents.

We are indeed pleased to publish this good news from the “Golden West” (a most fitting place to celebrate a golden wedding), and know that our readers in the East, especially those in the vicinity of New York City, and many graduates of the

New York College of Veterinary Surgeons throughout the country, will rejoice to know that our former esteemed associate is so well and so happy, and congratulate him from the bottom of their hearts. It is difficult to conceive of Dr. Wm. Anderson being old enough to celebrate the fiftieth anniversary of his marriage, as when he was with us in New York, not *more* than ten years ago, he was as lively and apparently as young as the rest of us, the majority of whom have not yet celebrated their silver weddings.

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EARNEST EFFORTS REWARDED.—As a result of its earnest efforts to give to the veterinary profession of America the *very best* veterinary journal published in the English language, the REVIEW has *every state in the Union* and *every Canadian province* represented on its mailing list; and *nearly every* veterinarian in each state and province. We desire to express our appreciation of this loyal support accorded us by the American veterinary profession, which would seem to indicate that we had *succeeded* in our efforts, and feel that we have received our just reward.

NEW YORK-AMERICAN VETERINARY COLLEGE BROADENS ITS CURRICULUM.—Appreciating the steady expansion of the field for veterinarians in live stock centres, the New York-American Veterinary College has recently broadened its curriculum by adding to its already long list of practical veterinarians on its teaching staff, Dr. John F. De Vine, president of the United States Live Stock Sanitary Association, and Consulting Veterinarian to the Department of Agriculture of the state of New York, who will give a *special course* of lectures—two a week during the whole session—on *Obstetrics* and *Cattle Pathology*. Dr. De Vine's practice is in the heart of one of the richest breeding districts in New York state.

ACCORDING to the last census, the total number of horses and colts in New England and the Middle Atlantic states last year was 1,582,656. Of these 1,502,244 were over a year old and had an average value of \$132.10. The total number of mules of all ages was only 54,096, or 3.4 per cent. of the number of horses and colts.—(*Breeders' Gazette*.)



## ORIGINAL ARTICLES.

### ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

By D. E. SALMON, D. V. M., MONTEVIDEO, URUGUAY, S. A.

#### IV.

#### THE DIRECT PROOF OF ARSENICAL POISONING (Continued).

In the course of his investigations in the Deer Lodge Valley, the writer made post-mortem examinations of 60 animals, of which 37 were horses and colts, 16 bovine animals, 6 sheep and 1 pig. Forty-three of these were killed for examination and 17 were found dead. The details are given in the following table:

*Table Showing the Number and Kind of Animals Upon Which Autopsies Were Made, and Whether Killed for Examination or found dead.*

Kind of Animal.	Killed for		Total.
	examina- tion.	Found Dead.	
Horses and colts.....	22	15	37
Bovine animals .....	14	2	16
Sheep .....	6	0	6
Pig .....	1	0	1
Total .....	43	17	60

These examinations were made on 32 ranches, situated from 1.5 to 13 miles from the smelter, and the results may, therefore,



be accepted as fairly representative of the condition of the livestock in the smoke zone of the valley. The examinations according to months were as follows: February, 24; June, 1; July, 5; August, 11; September, 4; October, 6; November, 5; December, 4; all in the year 1906.

#### THE LESIONS FOUND.

The most frequent lesions found were gastric and intestinal redness, abnormal quantity of liquid in the body cavities, congested kidneys and liver, congestion of the brain or meninges and flabby heart. In 16 cases the stomach showed great redness, in 19 cases the redness was moderate, and in 12 cases slight, a total of 47, or 78.3 per cent. In 18 cases the redness of the intestines was extreme, in 12 moderate, and 17 slight, a total of 47. The distribution of the redness between the stomach and intestines was as follows:

Slight in both.....	5
Moderate in both.....	5
Intense in both.....	9
Stomach only affected.....	9
Intestines only affected.....	9

Either stomach or intestines affected 56, or 93.3 per cent.

Effusions or an increased quantity of liquid in the body cavities was very common. In the cerebral cavity surrounding the brain or within the ventricles a slight effusion was noted in 5 cases, and a greater but still moderate quantity in 13 cases. In a considerable number of cases the brain was not examined.

In the pericardium, the effusion was slight in 12 cases, moderate in 22 and large in 9, being a total of 43, or 71.6 per cent. In the thoracic cavity it was slight in 2 cases, moderate in 3 and great in 2. In the abdominal cavity it was slight in 5, moderate in 12 and great in 4, a total of 21, or 35 per cent. There were effusions, or increase of serous fluid, found in one or more of these cavities in 48 cases, or 80 per cent.

The liver was described as congested in 22 cases, enlarged in 9, pale in 8, soft in 1 and yellowish in 3. The kidneys were congested in 32 cases, pale in 5 and soft in one.

The heart appeared flabby in 23 cases. The brain or meninges were congested in 23 cases. The bladder was inflamed or congested in 24 cases. The respiratory organs showed congestion or hæmorrhages in 19 cases.

Gastro-intestinal redness as a result of arsenical poisoning is well known and is mentioned by all writers on the subject. Effusions in the body cavities are not referred to with the same frequency. Ziegler and Obolonsky<sup>1</sup> explain these effusions, which previously had been mentioned by Pistorius as having been repeatedly observed in the pleura and pericardium, as being the result of disturbances in the circulation and, also, of changes in the vascular walls.

In his evidence submitted to the Royal Arsenical Commission, Dr. Niven<sup>2</sup> said: "The recent cases of arsenical poisoning have certainly been associated with a considerable amount of effusion of liquid in the abdomen, ascites."

Hecktoen and Riesman say:<sup>3</sup> "The brain and cord do not always escape the direct action of arsenic. This is shown both by the symptoms and post-mortem findings. In rare instances cerebral hæmorrhage has been observed; but usually in the most acute cases hyperæmia of the meninges and effusion into the ventricles are the only pathologic changes found in the brain, and these are not constant."

In the horse experimentally poisoned in these investigations (No. 92), a small quantity of effusion was found in the peritoneal cavity and about 8 ounces in the pericardium.

There were, consequently, found lesions which might reasonably be attributed to arsenic affecting not only different organs in the same apparatus, but different systems of organs in the same animal. To be more precise, there were 40 post mortems, or 66.6 per cent., in which the above-mentioned lesions were found affecting the gastro-intestinal tract and the liver or kidneys, and in which there was, also, effusion or increase of liquid

in the serous cavities. There were 17 post mortems, or 28.3 per cent., in which, in addition to the abnormalities just mentioned, there was, also, congestion of the brain or meninges. While in considering the diagnoses we may freely admit that congestion of the stomach and intestines may arise from other irritants than arsenic, and that congestion of the kidneys and liver may arise from other causes, when we find in the same animal (1) congestion of the gastro-intestinal tract, (2) of the liver and kidneys, (3) of the brain or meninges, and (4) effusions in the serous cavities, we must admit that the disease was not an ordinary local one, but was due to a cause which acted on all parts of the body. Now, the only cause of disease which was discovered, either by the experts of the complainant, or of the defendants, in this case, as acting upon such a large proportion of the animals in the Deer Lodge Valley, and which could produce all the abnormalities just mentioned, was arsenic.

The experts for the defense had much to say about the existence of thrombi caused by the presence of the *Sclerostomum equinum* in the anterior mesenteric artery and the effects of such thrombi upon the intestines, liver and kidneys; but the writer is of the opinion that this cause cannot be accepted as accounting for the redness and catarrhal condition of the stomach, the effusions in the pleural cavity, the pericardium and ventricles of the brain, or the congestion of the brain and meninges. It does not account for any of these lesions in horses such as No. 52, already described at length, in which the mesenteric arteries were in perfect condition; nor can it be extended to cover the similar lesions found in the cows and calves that were examined, for the reason that this is not a parasite of bovine animals.

A very interesting case was that of a cow, post mortem No. 30, which died very suddenly July 13, 1906. This animal was milked in the morning of that day, when she appeared perfectly well. In the afternoon she was found in the field dead. The post mortem was made in the forenoon of the following day. There was beginning decomposition, indicated by the odor of the carcass when opened and the distension of the stomachs and

intestines with gas, and for this reason specimens were not taken for microscopic examination.

In the thoracic cavity was found some fresh reddish exudate on the costal pleura; the bronchial mucous membrane was much congested; the pericardium contained from 4 to 6 ounces of bloody serum; the heart was very red, its blood vessels greatly distended and its cavities filled with black clots. The peritoneal cavity contained considerable reddish liquid; the liver weighed  $13\frac{1}{2}$  pounds and about three-fourths of its tissue was light, clay-colored and apparently affected by fatty degeneration or partial necrosis; the spleen was black and soft. The stomach was much reddened and inflamed; the small intestine contained liquid only; the mucous membrane of the anterior portion was covered with a black deposit the nature of which was not determined; the vessels were congested over large areas, and there were some spots of a deeper red indicating inflammation. The large intestine was congested in many places and its mucous surface covered with black pigment. The kidneys were light colored, the apex of the pyramids yellowish owing to distension of the papillary ducts with a light-colored sediment mixed with urine. The bladder contained a small quantity of thick, muddy urine and its mucous membrane was deeply reddened. Examined microscopically, the sediment was found to consist almost entirely of renal epithelium, there being in addition a few leucocytes. The connective tissue about the udder, and especially in front of it, was distended with a straw-colored fluid containing more or less coagulated material.

For the writer, these lesions are such as are often caused by acute arsenical poisoning, but according to the defense they were clearly due to septicæmia hæmorrhagica. In acute arsenical poisoning, as has been observed by the writer in experimental cases, there is generally a very intense congestion of the abdominal vessels, and the liver or spleen may be gorged with blood so that they are black and soft. There may, also, be intestinal hæmorrhage.<sup>4</sup>

Septicæmia hæmorrhagica is a contagious disease, and, while outbreaks may probably appear occasionally from the sudden development of virulent characters by saprophytic microbes, the investigation of any particular case nearly always reveals the existence of previous cases in the same or in neighboring herds, and, with equal frequency, succeeding cases. One of the strong points in the diagnosis of that disease is, therefore, the occurrence of a number of cases within a period of time that would suggest common origin or contagion. On this ranch, no other similar cases occurred before or afterwards.

Another point in the diagnosis is that in septicæmia hæmorrhagica there are either swellings about the head and neck, or the peculiar pneumonia with great distension of the interlobular connective tissue by accumulated lymph. In this case there was neither. The accumulation of lymph in the meshes of the connective tissue about the udder might possibly be looked upon as a form of the external manifestation, but it must certainly be admitted that the localization in this region is a very unusual one in septicæmia hæmorrhagica.

The third character of this disease, which is so conspicuous and constant that it suggested a part of the name—that is, the numerous small hæmorrhages in the connective tissue about the external swellings, and on the serous and mucous membranes, was in this case conspicuous by its absence.

A more plausible theory seemed to the writer to be that the animal had in some way secured an article of food that contained a large quantity of arsenic, and had died from the intense action of this poison upon the brain and nervous system. When questioned as to the possible source of such an unusual quantity of arsenic, the owner said that the only change in conditions to which the cows had been exposed was due to the removal of a stack of hay giving them access to the chaff and dust which was shaken off in handling the hay and which accumulated at the bottom of the stack.

The writer, in investigating the question, was astonished at the large quantity of black dust which would accumulate on a



piece of white oilcloth placed at the foot of a stack and upon which a few forkfuls of hay were thrown. What was the nature of this dust? Was it the black soil of the valley dried and powdered, or was it smoke dust? As an answer to this question, the following analyses by Swain and Harkins<sup>5</sup> are submitted:

*Table Showing Quantity of Arsenic in Hay-Dust as Compared with the Maximum Quantity Found by Analysis of Samples of Hay, 1903 to 1907.*

Sample.	Distance from Smelter (Miles).	Parts $\text{As}_2\text{O}_3$ Per Million.
Hay (maximum) .....	3.0 E.	107
Hay dust .....	4.5 N.E.	967
Hay dust .....	4.5 N.E.	987
Hay dust .....	1.5 E.	3526
Hay dust .....	4.0 N.E.	4380
Hay dust. ....	4.0 N.E.	5140
Hay dust .....	2.0 S.E.	9190

This table shows that, whereas the *hay* richest in arsenic contained 107 parts of this poison per million, the *hay dust* richest in arsenic contained 9,190 parts per million, or 86 times as much. These analyses, therefore, furnish a very definite answer to our questions, and show clearly that the hay dust of the Deer Lodge Valley was mostly smoke dust, and that it contained an enormous quantity of arsenic. The sample containing 9,190 parts per million carried 64 grains of arsenic per pound, and it would not be necessary for a cow to eat many pounds of it to obtain a fatal dose.

Fortunately, a sample of this liver was taken for analysis, and was found to contain 63.12 parts of  $\text{As}_2\text{O}_3$  per million, or 0.441 grain per pound. As the whole liver weighed  $13\frac{1}{2}$  pounds, it must have contained approximately 6 grains of arsenic. This was by far the largest proportion of arsenic found in any



liver, being five times the maximum found in the livers of animals experimentally poisoned and which died of acute poisoning. There is, consequently, no reasonable doubt that the cause of death in this case was acute arsenical poisoning.

Another interesting case was revealed by post mortem No. 32, the subject of which was a gray gelding in good condition of flesh and weighing about 1,100 or 1,150 pounds. The owner of this animal lived about two miles southwest of the smelter where the grass was known to be heavily charged with arsenic, and for that reason proper precautions were not taken when allowing the animal to feed upon the luxuriant uncut hay of a neighbor, who had left this hay standing for the very reason that it was considered very badly "smoked." This second ranch was about two miles south of the smelter and the owner of the horse in question had been assisting to haul in the hay crop from other parts of the ranch on August 1st and 2d.

During the dinner hours the horse was allowed to feed upon the uncut hay above mentioned, and the owner was warned that he was taking heavy risks, but, as he did not consider this hay any more dangerous than the grass on his own ranch, he was not influenced by the warnings. However, the luxuriance of the growth and the more palatable nature of the grass probably led to the eating of a much larger quantity. The horse was taken with what the owner designated as "fits" in the afternoon of August 2; he was agitated, trembled violently and would fall down when walking. During the night he was restless and apparently delirious, and in the morning of August 3, fell into a small ditch and died. The autopsy was made within two hours after death.

The points observed which were considered abnormal were as follows: The subcutaneous fat had a gelatinous appearance, as did also that about the heart. There was abundant effusion in both the pleural and peritoneal cavities, and even the pericardium contained from 8 to 10 ounces of liquid. The specific gravity of the pericardial fluid was 1.018; of the peritoneal

effusion, 1,010. There was slight exudate on the pleura, and this membrane was thickened over both lungs and presented a small number of petechiæ. The vessels of the heart were congested.

The stomach was greatly inflamed and the mucous surface of the pyloric portion covered with tenacious mucus. The small intestine was catarrhal and filled with a thick, yellow, gelatinous liquid. The colon showed a number of patches of inflammation and such lesions were numerous in the rectum. The liver was soft and dark colored; the spleen large and soft. The kidneys were large and congested, weighing 3 pounds each; the bladder red and inflamed.

The brain was intensely congested on the surface and in the fissures, and was surrounded by considerable effusion. The spinal cord was congested at several points.

The microscopic examination of the liver and kidneys of this horse revealed changes similar to those which have usually been found by the writer in arsenical poisoning. In the kidneys there was desquamation of the epithelium of the capsule of Bowman; nearly all of the tubules were more or less obstructed with desquamated epithelial cells and coaguli, and there was proliferation of the endothelial cells of the arteries. In the liver, some of the portal veins and some of the central veins were greatly distended with blood and had greatly thickened walls. The protoplasm of the cells in a wide zone around many of the central veins, and especially around those with thickened walls, was lacking in substance and contained many vacuoles, perhaps the result of fat formation. Some of these central veins contained a number of desquamated liver cells, and the cells in some areas were disarranged so that the trabeculæ were completely broken up. There was, also, a considerable increase of interlobular connective tissue.

The chemical analysis of the liver, made by Professor Harkins, gave 3.9 parts of arsenic ( $\text{As}_2\text{O}_3$ ) per million, which, while less than was found in many of the Deer Lodge Valley livers.

was more than was recovered from the liver of one of the horses experimentally poisoned.

The lawyer for the defense, after conferring with one of his veterinary experts, announced that this horse had died of cerebro-spinal meningitis, and that the witness knew it. This affirmation, although it was intended to discredit the witness, may be admitted as having some foundation. The horse did have the symptoms and the lesions of acute cerebro-spinal meningitis, but they were complicated with those of gastro-enteritis and nephritis. In the opinion of the writer, it was an arsenical cerebro-spinal meningitis, and not the ordinary form produced by micrococci, nor, yet, the form supposed to be caused by cryptogamic poisoning. This conclusion seems to be warranted from:

1. The quantity of arsenic found in the liver.
2. The presence of a considerable quantity of liquid of a low specific gravity in the peritoneal cavity and in the pericardium.
3. The coincidence of cerebro-spinal and gastro-intestinal inflammation, together with lesions of the kidneys and bladder such as are found in arsenical poisoning.
4. The sudden appearance and rapid course of the disease.

That this animal had been suffering from chronic poisoning for some time is indicated by the increase of the interlobular connective tissue of the liver, and by the thickening of the vascular walls; and this, no doubt, greatly aided the development of the acute poisoning when somewhat more than the accustomed dose of arsenic was ingested.

It is now convenient to give some account of the studies that were made to determine the effect of feeding the grass that was growing on the ranch of the owner of this horse, whose name was John Malinak. This was a man who had come from the North of Europe and had saved enough from his wages as a laborer in the smelter to buy a small ranch. From this ranch he was trying, with most discouraging results, to obtain a living

for himself and family. His losses of stock as given by himself were as follows:

Year.	Horses.	Cows.
1904 .....	4	1
1905 .....	5	1
1906 .....	6	1
	—	—
Total.....	15	3

At the time this information was obtained, August 13, 1906, the only equine stock left on the ranch was a riding pony.

In order to further test the poisonous effects of the grass on the Malinak ranch, the Farmers' Association selected a cow and a yearling heifer in good condition and sent them there to be pastured, early in August, 1906. These animals ran in a field together until October 9, or about two months, and were then killed for examination.

The cow had steadily lost flesh and had become quite emaciated, although there was much grass still remaining in the field. The animal was sacrificed for examination October 9, and the autopsy (No. 48 of the record) showed the fat of a deep yellow color, indicating disturbance of the functions of the liver. There was considerable effusion in the pleural cavity and 6 to 8 ounces in the pericardium.

The serous surface of the lungs was covered with fine points of black pigmentation, the mucous membrane of the trachea was congested, and there were small areas of broncho-pneumonia in the anterior and inferior portions of the left lung. The median lobe of the right lung was also affected with broncho-pneumonia, the red color contrasting with the whitish, distended air spaces which could be seen through the pleura. The bronchial glands were enlarged but showed no other evidence of tuberculous infection. The heart was flabby.

The mucous membrane of the fourth stomach was very red and catarrhal, and the small intestine showed patches of congestion. The kidneys were a dark greenish brown in the cortical portion and very red in the medullary portion. The bladder was, also, congested but only to a slight degree. There was a small abscess containing 2 to 3 ounces of pus in the right sub-lumbar region, just anterior to the kidney, and a second small abscess in the inferior border of the liver. The brain was pale with a macerated appearance and there were about 2 ounces of liquid in the cranial cavity.

The microscopic examination of the kidneys showed great flattening and destruction of the epithelium of the tubules; many tubules greatly dilated, and many others obstructed with coagulated material and partly disintegrated cells. In some of the Malpighian bodies there was thickening of Bowman's capsule, and in some there was more or less coagulated material between the capsule and the glomerulus. There was endarteritis and many areas of intertubular connective-tissue proliferation.

In the liver, the veins were distended and the columns of cells badly broken up. There was some increase of the interlobular connective tissue. In a narrow zone around some of the dilated central veins the cells have taken a deeper eosine coloration and the nuclei are very indistinct or invisible. Around other veins this color may also be seen, but the nuclei are still distinct. In other areas the protoplasm of the cells lacks substance and contains vacuoles, indicating fatty degeneration.

Analysis of the liver revealed 10.4 parts of arsenic trioxide per million.

The yearling was also sacrificed and examined on the same day. It had lost flesh while in this pasture and was quite thin, though it could not be described as emaciated.

The autopsy (No. 49) showed a flabby heart, surrounded by about two ounces of fluid. The trachea was somewhat congested. The true stomach was very red and the small intestine considerably congested. The liver was friable and the color inclined to yellowish. The membranes of the brain were con-



gested and there were about two ounces of liquid in the cranial cavity.

The microscopic examination showed in the liver congestion of the portal vessels and central veins; disarrangement of the cells, and a more or less generalized degeneration of the protoplasm as shown by light, colored areas and indistinct vacuoles, readily seen but not quite as well defined as in the typical fatty degeneration, which also existed in a wide zone around the distended central veins.

In the kidneys there was advanced degeneration and disintegration of the epithelial cells, especially of the convoluted tubes. Many tubes were filled with coagulated material and with masses of desquamated and partly disintegrated epithelium. There was some desquamation of the epithelium of Bowman's capsules, and, in some cases, coagulated material between the glomerulus and the capsule. There was endarteritis and areas of intertubular connective-tissue proliferation.

The liver of this calf carried 16.1 parts of arsenic trioxid per million.

These two animals were undoubtedly suffering from chronic arsenical intoxication as shown by:

The loss of condition in both animals; the congestion of the trachea in both animals; the broncho-pneumonia in the cow; the congestion of the stomach and intestines in both animals; the cerebral congestion in the calf; the changes in the kidneys and liver seen on microscopic examination and the large quantity of arsenic existing in the livers of both animals. In that of the calf, there was found about 25 per cent. more arsenic than the maximum found by Harkins and Swain in the livers of animals which they experimentally poisoned and which died of such poisoning.

The last case to which allusion will be made in this article was a horse (No. 91 of these notes) on which an autopsy was made by the experts of the smelter company before the viscera were seen by the writer. Owing to information that this animal

had not been eating for a considerable time, was very weak and liable to die at any moment, a visit was made to the ranch September 6, 1906. On arrival, it was found that the company's experts had been there a short time before, had killed and posted the animal, but as less than an hour had elapsed the viscera were still in good condition for examination.

The trachea, which had not been opened, was found considerably congested; the lungs were also congested with areas of hypostatic pneumonia and emphysema on the lower border. The stomach had been carried away; the small intestine was catarrhal with reddened patches, the colon was greatly reddened in parts, and the rectum, which had not been opened, showed similar hyperæmic areas. When a section was made through the kidneys, the Malpighian bodies stood out as prominent blood-red spots on the cortical substance; the bladder was much congested. The liver appeared greatly congested.

Microscopic examination of the liver tissue showed in a large proportion of the lobules areas in which the cells were more deeply stained with eosine and in which the nuclei had disappeared, indicating multiple necrosis. There were many free nuclei and chromatin granules. In many areas the regular arrangement of the cells was broken up and the protoplasm had a foamy appearance. Some of the central veins were much distended and the walls inflamed and thickened. There had also been some proliferation of the interlobular connective tissue.

This liver resembled very closely in its lesions that of cow No. 48 (see above), but the lesions were more intense.

In the kidneys, the glomerular vessels were greatly congested and there was thickening and desquamation of Bowman's capsule. There was extensive proliferation of the intertubal connective tissue, and, in parts, degeneration of the tubal epithelium, shown by great flattening in some areas and disintegration and desquamation in others. A great many tubules contain foamy appearing coaguli; others, solid and deeply stained coaguli. There was also endarteritis, as shown by swelling of the nuclei and proliferation of the endothelial cells.

The chemical analysis of the liver of this horse revealed no more than a trace of arsenic.

This was one of the cases such as are occasionally encountered in arsenical poisoning, with animals as well as with men, in which the arsenic had nearly disappeared from the liver. This was probably due in this case to the fact that the animal had ingested a considerable quantity of arsenic and had then stopped eating, or had, on account of his illness, been fed upon imported, arsenic-free food. The congestion of the trachea, lungs and intestines; the acute glomerulo-nephritis; the desquamation of the tubular epithelium, and the necrosis of the liver cells certainly indicate recent and severe poisoning; while the increase of connective tissue in the kidneys and liver, the flattening of the renal epithelium and the thickening of the walls of the central veins of the hepatic lobules, just as certainly, indicate that a poison had been acting upon these organs for a considerable time. The case was, therefore, one of chronic intoxication ending with acute poisoning.

#### REFERENCES.

- (1) Ziegler, Dr. E., and Obolonsky, Dr. N. Experimentelle Untersuchungen über die Wirkung des Arseniks und des Phosphors auf die Leber und die Nieren. Beiträge zur pathologischen Anatomie und Physiologie. Zweiter Band, Drittes Heft (1888), p. 293.
- (2) Royal Commission on Arsenical Poisoning. First Report, Part 2, p. 23. London, 1903.
- (3) Hecktoen and Riesman. American Text-Book of Pathology, p. 355.
- (4) Peterson and Haines. Text-Book of Legal Medicine and Toxicology. Philadelphia, 1904, vol. ii., p. 412.
- (5) Swain, R. E., and Harkins, W. D. Arsenic in Vegetation Exposed to Smelter Smoke. Journal Am'n Chem. Soc., XXX., No. 6, June, 1908, p. 924.

THE United States Civil Service Commission announces an examination on November 8, 1911, to secure eligibles from which to make certification to fill vacancies as they may occur in the position of veterinarian in the Quartermaster's Department, unless it shall be decided in the interest of the service to fill such vacancies by reinstatement, transfer, or promotion. The usual entrance salary to this position is \$1,200 per annum. Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

## THE CONTROL AND ERADICATION OF GLANDERS.\*

BY C. D. MCGILVRAY, M.D.V., WINNIPEG, CANADA.

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In dealing with this subject and presenting it for consideration, it is my intention to place before you certain features which have impressed themselves upon me, during the past seven years, while actively engaged in dealing with the control and eradication of glanders, through the use of mallein, among horses in the province of Manitoba.

While glanders has been considered, both by the veterinary profession and intelligent horsemen, as a disease which, on account of its nature, should be controlled and eradicated, still the "*bête noire*" has apparently been as to what measures should be adopted and followed as a means of effecting this end with the least material sacrifice.

The various policies propounded and methods adopted have shown a wide divergence, and the greater the magnitude, or scope, of the field under observation, the less tenable have many of them appeared.

Without entering into any apparent reiteration or descanting upon these, it would appear that the most common procedure in dealing with outbreaks of glanders had been directed towards animals showing plainly discernible clinical symptoms, such animals being destroyed, while other contact horses, if not manifesting clinical evidences of the disease, were often disregarded, or, at best, placed under quarantine restrictions as appeared exigent for a short time, at the end of which, if they did not manifest clinical symptoms of the disease, restrictions and observations usually terminated. It was not sufficiently realized

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\* Presented at the forty-eighth annual meeting of the American Veterinary Medical Association, Toronto, Can., August, 1911.

that horses could be affected with occult, or concealed, glanders, remaining in this latent condition even for several years and, while nevertheless diseased, might, to all outward appearances, be healthy? Therefore quarantining of itself, to be of any avail as to determining even possible freedom from the disease, would require to be for a much more extended period than was usually imposed.

Again, when the necessary steps were taken to ascertain the actual condition as to health of contact animals by the use of mallein, and where such animals reacted to the test, slaughter was not, in many cases, enforced, nor, on the other hand, were definite restrictions or limitations placed upon them.

This was the state of conditions which existed in the province of Manitoba prior to the year 1905, and, as a result, glanders had become widely distributed throughout the province, with a marked increase in prevalency.

Through the efforts of Dr. J. G. Rutherford, C.M.G., Veterinary Director General for the Dominion of Canada, Manitoba was, during February, 1905, brought under Federal control and placed under the operations of the Contagious Diseases of Animals Act. This responsibility having been assumed by Dr. Rutherford, the policy embodied in the regulations relating to glanders drafted by him was put into practical operation and consistently carried out as a means, if possible, of effectively dealing with and eradicating glanders from the province, the field work in connection with which I took charge of, under his directions, during February of the year 1905.

This policy, in brief, was that all animals affected, or suspected of being affected with glanders, should be inspected and submitted to the mallein test, and all which definitely reacted forthwith slaughtered, compensation being paid to owners as provided for by the Contagious Diseases of Animals Act at the rate of two-thirds the animal's value, with a maximum valuation of \$150 per head for grade animals and \$300 for pure breds. Any animals giving doubtful or unsatisfactory results at the time of first test were not slaughtered but kept under



close quarantine restrictions and again submitted to the mallein test at the expiration of fifteen days from the time of the first test. If, upon retest, they proved negative, they were released, while, on the other hand, if they reacted they were forthwith slaughtered and the owners compensated, as provided for.

In actual outbreaks of the disease, when any of the animals under control were clinically affected, these, together with any other horses on the premises, were tested. All reactors were promptly destroyed and the owners ordered and instructed as to the satisfactory cleansing and disinfection of the premises by means of limewash and carbolic acid, together with the disinfection of all other articles and utensils which might have been in use, to the satisfaction of an inspector. The animals which were negative to the first test were placed under quarantine restrictions for a further test before being released. This retest was conducted at the end of fifteen days from the time of first test, and if they again proved negative to the test they were released, while, if any of them reacted, they were destroyed and the premises again cleansed and disinfected.

With the view of tracing the source of infection in outbreaks, owners were closely questioned as to the history of the various horses on their premises. Further searching inquiry was also made as to any possible contact, directly or indirectly, of other horses with the diseased animals, either adjacent or remotely situated. Upon receiving this information, which was carefully noted, steps were taken to trace up, locate and deal with all horses and premises to which suspicion was thus attached, and such suspects were then submitted to the mallein test.

While this, as you will see, involved a considerable amount of labor and detail work, still it has shown itself to be an essential factor in the control and eradication of glanders.

The results of our work have shown us that in the control of glanders efforts must largely be directed towards restricting all traffic and migrations of reactors and contact infected animals. Almost invariably where outbreaks of glanders have been found in what has hitherto been a healthy stud, such outbreaks

have originated from and been caused by the introduction on to the premises of occult affected animals, which, at the time, were not showing any discernible clinical symptoms, but were to all outward appearances healthy.

The view has been somewhat prevalent that a horse affected with glanders may only be capable of transmitting infection when clinically affected, either with a visible nasal discharge, or farcy buds. Such, however, is erroneous. While, no doubt, clinically affected animals, especially those having a profuse nasal discharge, are more highly dangerous and infective than occult cases, nevertheless it must not be overlooked that many of the latter are affected with concealed lesions as of the nasal passages, larynx, trachea or lungs, and in the case of the latter (concealed pulmonary glanders) the lesions may involve considerable areas having suppurating foci discharging bacilli which are in turn expelled by normal expiratory movements. Again, sooner or later, many of these become clinical. Thus all doubt should be removed as to the dangerous nature and infectiveness of a very large number of these occult cases.

In the clinical examination of horses for glanders, the condition of the submaxillary glands should always be carefully examined and an indurative, bosselated condition of these glands, even in the absence of any visible nasal discharge or ulceration, must be regarded with suspicion. The absence of a visible ulceration of the nasal mucosae does not by any means exclude the possibility of glanders being present, as even in clinical cases a visible ulceration on the septum, or under the alae, is not always present, ulceration being more often situated higher up and therefore invisible.

Before proceeding to consider the use of mallein and other features in connection with the testing of horses, it would seem proper to furnish reliable statistical information regarding glanders in Manitoba:

During the years 1901 to 1904 only clinical cases were destroyed. No official records available of number tested.

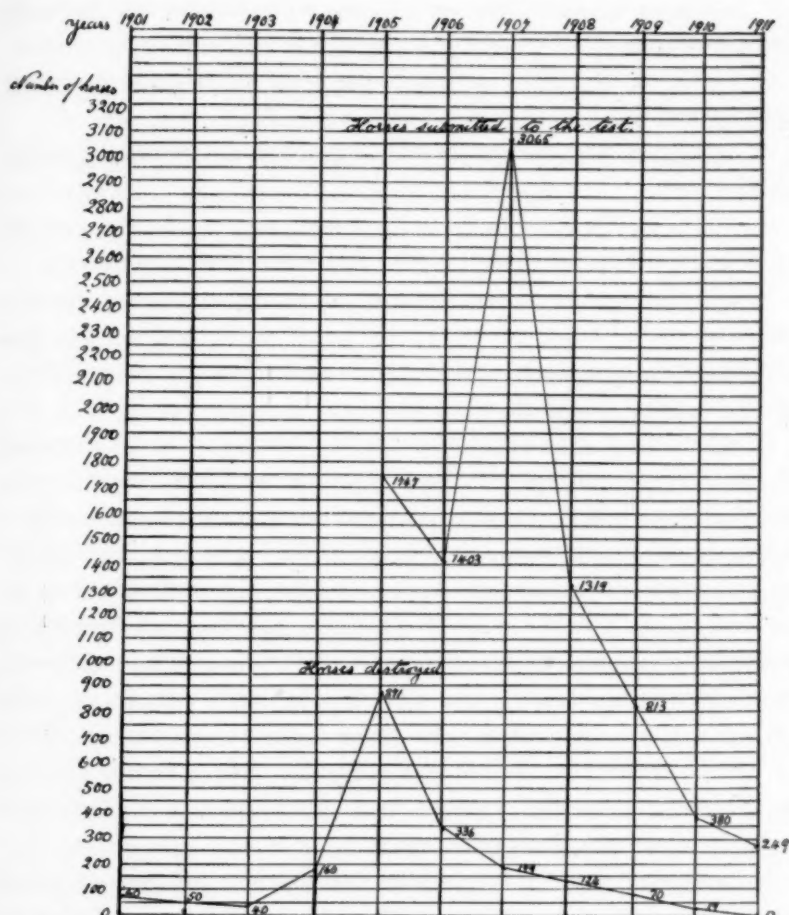


CHART SHOWING NUMBER OF HORSES TESTED WITH MALLEIN AND NUMBER DESTROYED FOR GLANDERS IN MANITOBA FOR A PERIOD OF TEN YEARS.

Each space on chart represents fifty horses.

In 1905, of 1,747 horses tested, 871 were destroyed, 365 being clinical cases.

In 1906, of 1,403 horses tested, 336 were destroyed, 173 being clinical cases.

In 1907, of 3,065 horses tested, 199 were destroyed, 99 being clinical cases.

In 1908, of 1,319 horses tested, 124 were destroyed, 53 being clinical cases.

In 1909, of 813 horses tested, 70 were destroyed, 29 being clinical cases.

In 1910, of 380 horses tested, 19 were destroyed, 9 being clinical cases.

In 1911, 249 horses have been tested, and up to the present time (August 19) no cases of glanders have been discovered.

In addition to the above, during the above-mentioned period, extending from 1905 to 1911, we have submitted to the test 14,850 horses and mules entering at boundary points in Manitoba from the United States.

In connection with the foregoing statistics it will be observed that, under the method followed preceding 1905, when only clinical cases were destroyed, the disease was on the increase.

Under the policy which was introduced and put into operation in 1905, attention was immediately directed towards all premises upon which cases of glanders had been destroyed or reported during the preceding year. Curious as it may seem, almost invariably, among the contacts of cases previously dealt with, it was found that a very large number of these contacts had, in the meantime, developed clinically, hence the work during this year consisted largely in tracing up and dealing with the contacts of previous outbreaks.

During the year 1906, while the number of horses tested was slightly less than the preceding year, the number found to be diseased was less than one-half.

During 1907, horse owners and practicing veterinarians, now being entirely in sympathy with and having confidence in the work being done, began to report freely any cases to which suspicion might be attached as shown by the consequent increase in the number of horses inspected and tested; yet, while the number of horses inspected and tested was considerably increased, the number found to be affected was very greatly diminished.

The same policy was consistently followed during the succeeding years with a more pronounced decrease each year in

the number of animals found to be affected and destroyed, until, during this year, up to the present time (August 19, 1911), no cases of glanders have been detected.

In the carrying out of this work, as a result of careful observations, certain conclusions have impressed themselves upon us regarding the use and value of mallein which would seem to be worthy of consideration.

#### THE USE AND VALUE OF MALLEIN.

In testing the clinically affected horses, they invariably, with the exception of a few cases which prior to injection had high temperatures exceeding  $102^{\circ}$  F., gave positive results, and showed well-marked thermal reactions, exceeding  $2.5^{\circ}$  over the highest pre-injection temperature, accompanied by typical infiltration at seat of inoculation, and associated in most cases with constitutional disturbances as manifested by increased respirations and inappetance.

The cases having high initial temperatures (autogenetic) in the absence of a further thermal increase after injection, however, gave characteristic local reactions, associated with more or less constitutional disturbance.

Mallein, therefore, in our hands, demonstrated an unmistakable affinity for clinical cases of glanders. Such being the case, no reason can appear to exist why this selective affinity should not be maintained when applied to occult cases.

The common acceptance of a reaction has been given as an increase in temperature of 2 degrees over the average pre-injection temperature, associated with local and organic reactions. This, after all, to those who have given the matter serious consideration, is somewhat indefinite, if not misleading. A very important feature has apparently been overlooked in not keeping in view the fact that normal temperature is not a fixed quantity, but varies in individuals according to environment, location, seasons, etc. Throughout many districts of Western Canada, the normal temperature of horses presents a wide range, varying



from 99° to 102° F. During the greater part of the year the average normal temperature has been found to be about 101° F., just as many being found with temperatures over that mark as with temperatures below.

If any hard and fast rule was applied of an increase of 2° constituting a reaction, the individual with a temperature of 99° to-day would, to-morrow, as a result of mallein injection, if the temperature reached 101.5°, be classed as a reactor. Nevertheless the temperature may even then be within a normal range. Again, horses frequently have temperatures of 99°, and upon the succeeding day, without any injection of mallein, may present a temperature of 101° to 102°, maintained during the entire day.

I am somewhat inclined to think that this is a pitfall into which many have fallen, and may to some extent explain why they have encountered so many reactors which have never developed clinical symptoms and which upon retest, fail to manifest any reaction and have been wrongly classed as "ceased reactors." In reality many such animals never reacted to the test, as their temperatures after injection were still within a normal range, and while possibly not altogether satisfactory, were not, in the true sense, reactors. It would seem, therefore, that in the intelligent application and use of mallein it is not only essential to determine the single individual's apparent normal temperature, but also to determine the normal range of temperature for horses in the area under observation.

It is usually accepted and acknowledged by those engaged in dealing intelligently with mallein in the control of glanders that animals which have shown a slight or doubtful reaction to a first mallein test, may subsequently either fail to react or to do so but slightly, or, on the other hand, may even show a pronounced reaction without in the meantime developing any external manifestations of disease. This fact has apparently given rise to a considerable amount of controversial comment. Close observations have led me to conclude that the animals which entirely fail or cease to react are usually those which have not

given a characteristic reaction to a first test. Those which have shown a positively characteristic reaction to a first test seldom fail to react more or less to a second test, but may fail to react definitely to some subsequent test which may result, in some animals, from an acquired tolerance to mallein induced in them by repeated injections.

It is advisable, I think, to consider ceased reactors, so-called, as a class comprising at least two distinct sub-classes, viz.:

A—Pseudo ceased reactors.

B—Authentic or actual ceased reactors.

*Pseudo Ceased Reactors.*—Under this heading may be considered all animals which have given a doubtful or non-characteristic reaction to a first test, but which fail or cease to react to subsequent tests. In the control work of glanders on a large scale, there will necessarily be found a large number of animals which, for some reason or other, may give doubtful results to a first test and which, upon retest, may prove entirely negative. In the true sense these are not ceased reactors as, in the first place, they had not given a characteristic or positive reaction and, upon proving negative to a second test, may as a general rule be considered innocent. This class has, to my mind, been largely drawn upon by those tending to disparage the value of mallein.

*Authentic, or Actual, Ceased Reactors.*—In the true sense of the term, a ceased reactor is an animal which has given a characteristic or positive reaction to the test, but which has proved entirely negative, or failed to react, even atypically, to subsequent tests. This class I do not consider to be at all as numerous as is alleged by some, being of the opinion that included in this class by them are many which should rather be classed otherwise.

In the case of authentic, or actual, ceased reactors, whether from an acquired tolerance as a result of repeated malleinization or a supposed recovery, I consider them as a dangerous class to which suspicion must be attached, from the fact that out of

their numbers arise individuals responsible for fresh outbreaks, many instances of which could be cited in substantiation thereof.

A very interesting feature which has been observed in connection with many of these so-called ceased reactors which have been kept under official supervision is, that having reacted more or less definitely to first and second test, they may subsequently fail to react to third, fourth and further tests if made within intervals of thirty, sixty and ninety days, but if allowed to remain without being subjected to mallein for a period of twelve months or more, they then, when tested again, show a pronounced reaction.

In illustration, I append herewith records dealing with the case of one of these ceased reactors:

\* During July, 1908, an outbreak of glanders was detected and dealt with by officers of the Department at High River, Alta. Thirteen horses on the premises were inspected and tested, eight of which reacted and were destroyed. Of the other five, four were entirely negative, while one, a black stallion named "Fritz," reacted, but on account of especial value to the owner, at his request was held for further test.

#### RECORD OF TESTS OF BLACK STALLION "FRITZ."

Temp. Before Injection		<i>First Test.</i>		Temp. After Injection			
July 13, 1908.				July 14, 1908.			
3 p. m.	7 p. m.			7 a. m.	10 a. m.	1 p. m.	4 p. m.
100°	100°			103	103°	102°	102
Maximum swelling, 3 in. x 4 in. No clinical symptoms present.							

Temp. Before Injection		<i>Second Test.</i>		Temp. After Injection			
August 22, 1908.				August 23, 1908.			
6.30 p. m.	9.30 p. m.			8 a. m.	10.30 a. m.	2 p. m.	5 p. m.
100	100°			105°	105°	103°	104

No clinical symptoms present and owner still refused to have animal destroyed.

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\* I am indebted to Dr. Rutherford for placing the official records dealing with this case at my disposal.

During December, 1908, the owner had the horse tested privately. No official record of test results, which were supposed to be negative.

*Fourth Test (Third Official Test).*

Temp. Before Injection			Temp. After Injection				
January 13, 1909.			January 14, 1909.				
2 p. m.	9 p. m.		7.30 a. m.	10 a. m.	1 p. m.	3.30 p. m.	7.30 p. m.
100	100		100 <sup>3</sup>	100 <sup>2</sup>	102	101 <sup>3</sup>	101

Maximum swelling, 2 in. x 2 in.

*Fifth Test.*

Temp. Before Injection			Temp. After Injection				
January 24, 1910.			January 25, 1910.				
6 p. m.	9 p. m.		5.30 a. m.	8.30 a. m.	11.30 a. m.	2.30 p. m.	5.30 p. m.
99 <sup>2</sup>	100 <sup>1</sup>		100 <sup>2</sup>	100 <sup>2</sup>	101 <sup>1</sup>	100 <sup>4</sup>	100

Maximum swelling, 3½ in. x 4 in.

During June, 1910, arrangements were made by which this horse was procured from the owner and removed to the Quarantine Station at Lethbridge, where it was kept isolated under the supervision of Dr. A. Watson, one of the pathologists of the Department. It was allowed to remain without being subjected to mallein for a period of about seventeen months and was then submitted to the test on June 6 and 7, 1911, by Dr. Watson in the presence of Drs. Hilton and Hargrave, also officials of the Department. The results of the test are as follows:

Temp. Before Injection			Temp. After Injection				
June 6, 1911.			June 7, 1911.				
7 a. m.	12 a. m.	10 p. m.	8 a. m.	10 a. m.	1 p. m.	4 p. m.	10 p. m.
100	99 <sup>4</sup>	101	102	103 <sup>3</sup>	103 <sup>3</sup>	103 <sup>4</sup>	101 <sup>1</sup>

Maximum swelling, 7 in. x 7 in.

After injection there was present a slight lachrymal discharge and tenderness of submaxillary glands, also slight cedema under the abdomen anterior to the sheath.

On July 13 this horse was destroyed at the Quarantine Station and a careful post-mortem examination was made by the pathologist, Dr. Watson, in the presence of Drs. Hilton, Hargrave and Gallivan, veterinary inspectors of the Department.

No clinical symptoms were in evidence and the horse was in fair condition prior to slaughter.

*Post Mortem*—Careful examination of the submaxillary lymph glands and of the mucosae lining the nasal passages, fauces, pharynx, larynx and trachea revealed no lesions. The cervical lymph glands, some appeared hæmorrhagic; others showed slight pigmentation and slight calcified deposits. Bronchial glands apparently normal. Lungs—on the surface of the left foot a typical glanders nodule was observed and many small, hard bodies could be felt embedded in the parenchyma, which, upon section, were found to be calcified glanders nodules, varying in size from a pinhead to small peas. Of the mediastinal glands, the anterior ones showed calcified deposits. Spleen appeared normal. In the liver numerous typical lesions of glanders were in evidence, many calcareous nodules being situated under the capsule; one nodule of large size was encysted with a cavity containing pus; groups of encapsulated nodules with softening centres were embedded throughout the liver substance.

In determining a thermal reaction, I consider that where the temperature recorded at intervals of two hours from the eighth to the twentieth hour after injection does not reach and exceed  $2.5^{\circ}$  over the highest initial temperature within a normal range, and is unaccompanied by a definite typical reactionary swelling at seat of inoculation or marked constitutional disturbance, more especially where the acme has been reached before the twelfth hour after injection and begins thereafter to recede to the normal range, it is not a characteristic reaction from glanders infection. When the same degree of thermal reaction is obtained, accompanied by a definite local infiltration at seat of injection, and pronounced constitutional disturbance, it indicates a glanders infection.

When the thermal reaction reaches and exceeds  $2.5^{\circ}$  with the rise of temperature maintained from eight to twenty hours after injection, presenting the highest peak from the twelfth to the eighteenth hour, associated with a reactionary infiltration



at seat of injection, even in the absence of any marked constitutional or organic disturbance, it indicates a glanders infection.

In judging a typical local reactionary swelling, observations lead me to conclude that it depends not so much on the actual size as measured across its surface as on its nature as to shape, size, tenseness and presence of pain. The typical reactionary infiltration is nearly circular in outline, has a tendency to increase the area from the eighth hour after injection, and at the same time extends to and involves the deeper seated, underlying muscular tissues, giving rise to an acute myositis over which the skin becomes adherent. To the touch it is tense, hot and extremely painful, and if the neck has been the seat of injection, cord-like swellings (lymphatic) in some cases may extend to the shoulder, causing pain and difficulty of shoulder movement. When the infiltration assumes such a nature, I consider it a typical reactionary swelling irrespective of its surface measurement.

When an infiltration is not typical, it rarely exceeds a diameter of three inches and to the touch is found to be slightly painful, soft and movable, remaining superficial in the skin and subcutis, not extending to or involving the underlying muscular tissues, nor perceptibly increasing in area after the eighteenth hour, and has a tendency to become absorbed and gradually disappear thereafter. It does not extend towards the shoulder joint nor cause stiffness of movement.

Oblong infiltrations should be carefully observed, as even when of large size they are frequently not typical, being a dependent œdema, usually resulting from the manner in which the injection has been made, causing an oblong fold to become inflated.

These oblong, œdematous infiltrations should be differentiated from the cord-like swellings extending from a typical, circular, reactionary infiltration, as they tend to become more rapidly absorbed, do not present any of the other features such as extreme painfulness, are soft and movable, and do not extend to the deeper seated muscular tissues nor cause stiffness of shoul-

der movement as is characteristic of the typical reactionary infiltrations.

In retesting horses which have given a more or less definite reaction to a first test, my experience has been that the local reaction at second test may be less pronounced and temperature acme more variable and, while in a few cases the temperature acme has been observed from about the eighth hour after injection, more frequently it remained in abeyance until at and following the fourteenth hour.

In actual outbreaks where any of the animals under control are showing unmistakable clinical symptoms, all contacts should be regarded as possibly infected. Those giving a definite and characteristic reaction to the test, clinical or otherwise, should be considered as diseased and dealt with accordingly. Those in which the result of the test is negative or non-characteristic should be held under proper restrictions for a further test within a reasonable time. This has been found quite satisfactory by us when conducted at the end of fifteen days. If at this time they prove entirely negative to the test, they may safely be considered as non-infected. While, on the other hand, if any react, they should be considered as diseased and dealt with accordingly.

Any contact animals having temperatures over the normal range unless some other well-defined cause is in evidence to satisfactorily account for same, if upon testing, even in the absence of a further thermal increase, or a sudden drop or decline in temperature, they exhibit a typical local infiltration at seat of injection, accompanied by constitutional disturbance, should be considered as incubatively affected.

The course, as outlined above, having been pursued and consistently carried out in our operations, has been fruitful in preventing secondary outbreaks, none of which have been encountered by us during the period under observation.

Disparagement as to the value of mallein has been made by some, who claim that animals suffering from certain febrile affections and conditions other than glanders may react. This, needless to state, is a wrong application. In the first place, in

such cases the test should be deferred and not applied until animals are in a normal state, as even in the natural course of any febrile affection an increase in temperature might be encountered without the application of mallein, and which, under mallein inoculation, may be wrongly ascribed to the injection. In the course of our work very many horses suffering from non-febrile maladies have been submitted to the test and characteristic reactions have not been obtained if they had not previously been in contact with glandered horses. Likewise in the case of febrile affections, without any previous contact with glanders, characteristic reactions were not obtained. Horses should be tested under natural and normal conditions and fed and watered as customary. Temperatures, however, should preferably not be recorded immediately after watering. Physiological increases in temperature may be induced in horses undergoing test during extremely sultry weather, if closely confined in ill-ventilated stables. During extremely cold weather they should be protected from undue drafts and chills and the body clothed if necessary. Exercise to any great extent should be withheld until the required period for recording temperatures has elapsed, as any violent exercise very often perceptibly increases the temperature range. Fractious animals should also be properly restrained and controlled so that the temperatures can be taken without undue excitability or resistance.

During the first two years of our work much evidence accumulated from time to time as to infection being introduced by horses coming from other countries, so that during the early part of the year 1907, in order to lessen and prevent the possibility of fresh infection being introduced into Canada, the Veterinary Director-General deemed it advisable to take measures guarding against such contingencies, as a result of which the quarantine regulations were amended to conform to the general intents of his glanders policy. In the case of animals entering from the United States, it was required that all horses, mules and asses must either be accompanied by satisfactory certificate of mallein test, signed or endorsed by a duly authorized inspector

of the Bureau of Animal Industry of the United States Department of Agriculture, dated not more than thirty days prior to the time and date of entry, or if not so accompanied, such animals would be submitted to the mallein test by duly authorized inspectors of the Health of Animals' Branch of the Department of Agriculture of Canada. At the same time the importation of unbroken, branded or range horses, mules and asses was prohibited and, in compliance with the foregoing regulations, in addition to the number of horses mentioned as tested in field work, we have, as already stated, tested at boundary points in Manitoba 14,850 horses and mules coming from the United States.

In conclusion I would state that in connection with the control of glanders in the Province of Manitoba, while the number of animals which it was found necessary to slaughter during the first few years of the work was comparatively large, the decrease became rapidly pronounced and maintained and the measures taken to prevent infections from outside sources have so far proved satisfactory. It clearly indicates that the policy of eliminating, by the use of mallein, all reactors, both latent as well as clinical cases, when put into practical operation and consistently carried out, has the desired effect of eradicating glanders, and lapse of time will only tend further to show and prove that the policy involves the least material sacrifice.

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DR. H. M. HALVERSON, Yankton, South Dakota, president of South Dakota Veterinary Medical Association, says in renewing his subscription to the REVIEW: "I can't and won't get along without it."

ANNUAL CONVENTION OF NEW YORK STATE DAIRYMEN.—The thirty-fifth annual convention of the New York State Dairymen's Association will be held December 12, 13, 14 and 15, in one of the richest dairying sections of the state, at Olean. This place also has the advantage of good railroad facilities, and long distance trolley lines, running in from all directions. A large attendance is therefore predicted.

## AN UNDESCRIBED PATHOGENIC BACTERIUM IN MILK.\*

By E. C. SCHROEDER, M.D.V., and W. E. COTTON, D.V.M., Bureau of Animal Industry Experiment Station at Bethesda, Md.

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Several years ago, at the Experiment Station of the Federal Bureau of Animal Industry at Bethesda, Md., we made a series of tests relative to the occurrence of virulent tubercle bacilli in ordinary city milk, with special reference to their intermittent occurrence in milk vended by dairies from which tuberculous samples had been obtained with previous tests. In the course of these investigations many Guinea pigs were given intra-abdominal injections of milk and afterwards kept alive somewhat longer than is commonly believed to be necessary for well marked lesions of tuberculosis to develop. When the Guinea pigs were eventually killed some of them showed lesions on postmortem examination that could easily be mistaken as tuberculosis, but which our experience with tuberculosis in Guinea pigs helped us to distinguish as probably another disease, especially as careful microscopic examinations failed to reveal acid-fast bacilli, which are, as a rule, abundant and not difficult to find in the tuberculous lesions of Guinea pigs.

We soon discovered the disease to be transmissible through subcutaneous inoculations of affected tissue from Guinea pig to Guinea pig, but our efforts to cultivate a supposedly existing, specific micro-organism, and our attempts to find an organism in the lesions under the microscope, were unsuccessful.

After our interest in the subject had somewhat abated, it was actively restimulated during a study concerning the influence of tuberculin injections on the elimination of tubercle bacilli, with milk and otherwise, from the bodies of tuberculous cattle, by

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\* Presented at the Forty-eighth Annual Convention of the American Veterinary Medical Association, Toronto, Can., August, 1911.



discovering that the milk of a tuberculous cow at the Experiment Station caused the mysterious disease when it was injected into Guinea pigs that were afterwards permitted to live six weeks or longer. We collected milk from this cow repeatedly under the strictest conditions to exclude its infection from any source but the interior of her udder, and this milk proved to be fully as infectious as that collected earlier with less minutely elaborate precaution.

We again tried to isolate a specific micro-organism, and as no growth appeared in the numerous tubes of culture media inoculated with small fragments of tissue from affected Guinea pigs, we assumed that we were dealing with an organism that either could not be cultivated artificially or which would not grow in the culture media we had used; hence, as the disease was particularly severe in its action on the livers of Guinea pigs, we concluded to try a culture medium to which bile had been added.

On agar, containing 6 per cent. of glycerine and from 1 per cent. to 20 per cent. of ox gall, a growth was obtained, which was more vigorous in the tubes to which 5 per cent. or more of gall had been added than in those that contained less. Since obtaining this growth we have succeeded in cultivating the organism, which is a small bacterium, on other media, and have found that on some, on which it did not seem to grow at first, it multiplies quite well when their surface is smeared with pulp from the spleens of healthy Guinea pigs.

We are not yet fully prepared to make a detailed statement about the different substances on which the germ will grow, especially as it multiplies better on several media after it has lived one or more generations under artificial conditions. Its appearance on the surface of glycerine-bile-agar is in the form of small, pearly, slightly convex, pale gray colonies. The water of condensation in slanted tubes remains clear but is covered with a very thin, broken, almost imperceptible layer that looks like a small amount of fine, white dust deposited on the surface of a fluid which does not wet it and into which it cannot sink. A

similar thin, dust-like layer, beneath which the fluid remains perfectly clear, forms on the surface of some liquid media. This dust-like layer, when smear preparations of it are made and examined microscopically, has the appearance of a pure culture of the germ. In stab cultures the growth is located mainly at

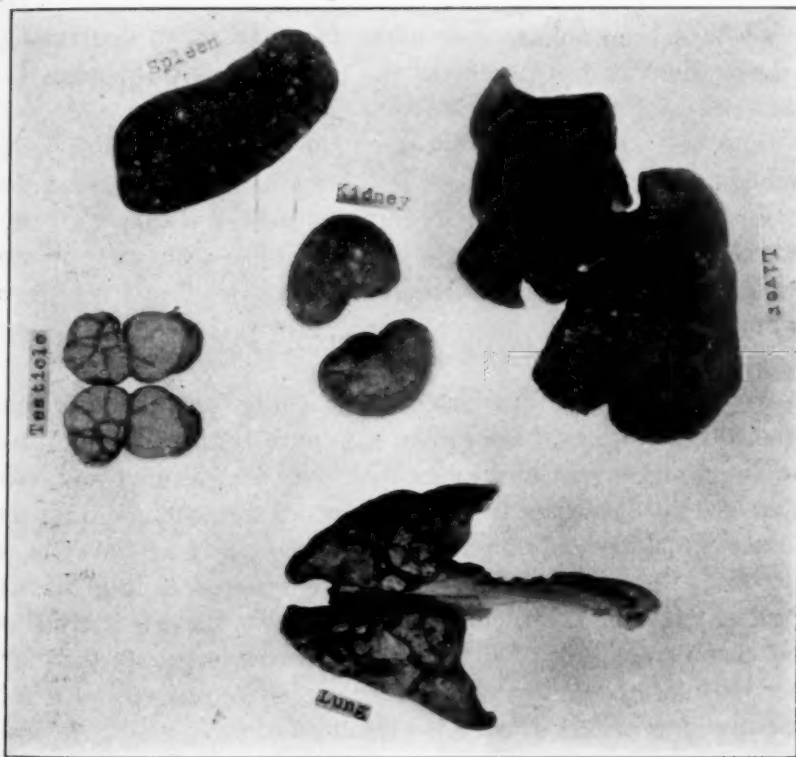


PLATE I.—Lesions caused by udder bacillus.

the surface, about the point of the puncture, giving the impression that multiplication, as with the tubercle bacillus, depends upon actual contact with air.

No growth has been obtained on any gelatine medium; on potato an almost imperceptible, flat, glistening layer with a very faint pink hue is formed, and we are not certain that growth occurs in milk. Milk tubes, inoculated directly from glycerine-bile-agar tubes, and milk tubes inoculated from such milk tubes,

contain enough infection to cause the disease on injection into Guinea pigs, but when the transfers from milk tube to milk tube are carried to the sixth generation the fluid seems to be innocuous, and no germs are distinguishable microscopically in any of the milk tubes. On all media the growth is slow.

The temperature required for artificial cultivation is, as far as we have been able to determine, from 37 to 39 degrees C., and the thermal death point of the bacterium is 60 degrees C., maintained for 15 minutes.

The germ is a Gram-positive, non-acid-fast bacillus with rounded ends, of about the size of a tubercle bacillus of the bovine type. On cover-glasses from cultures, stained with Loeffler's methylene-blue, the individual bacilli appear very minute and somewhat separated from each other; stained with Sterling's or anilin gentian-violet they appear to be larger and to lie closer together.

We have repeatedly isolated this bacillus from the lesions in affected Guinea pigs, have grown it in pure cultures, have caused the disease in other Guinea pigs with the pure cultures, and have recovered pure cultures from the tissues of the latter. So far the Guinea pig is the only animal species for which we have found it to be pathogenic, although we have injected it into rabbits, hogs, sheep, cats, dogs, chickens and cattle. Its extremely slow and chronic action on Guinea pigs, however, suggests that further inoculation tests with the other species of animals, if a sufficiently long period of time is permitted to pass, may give positive results.

Guinea pigs become infected either through the inoculation or the ingestion of pure cultures or of naturally infected milk, but show no well marked lesions until after the passage of six weeks or more. The gross anatomical lesions are an extreme enlargement and oedema of the lymph glands generally; the appearance of small glistening nodules in the lungs, which seem to be caused by the enlargement of minute lymph glands that are ordinarily too small to be visible; the conversion of the minute nodules in the lungs into larger, necrotic areas; an enormous

enlargement of the spleen, often to 30 and 40 times its normal volume; an irregular thickening of the capsule of the spleen, through which its surface becomes marked with white areas varying in size from mere points to several centimeters in diameter; an enlargement and degeneration of the liver, which organ becomes thickly beset on surface and section with irregular,

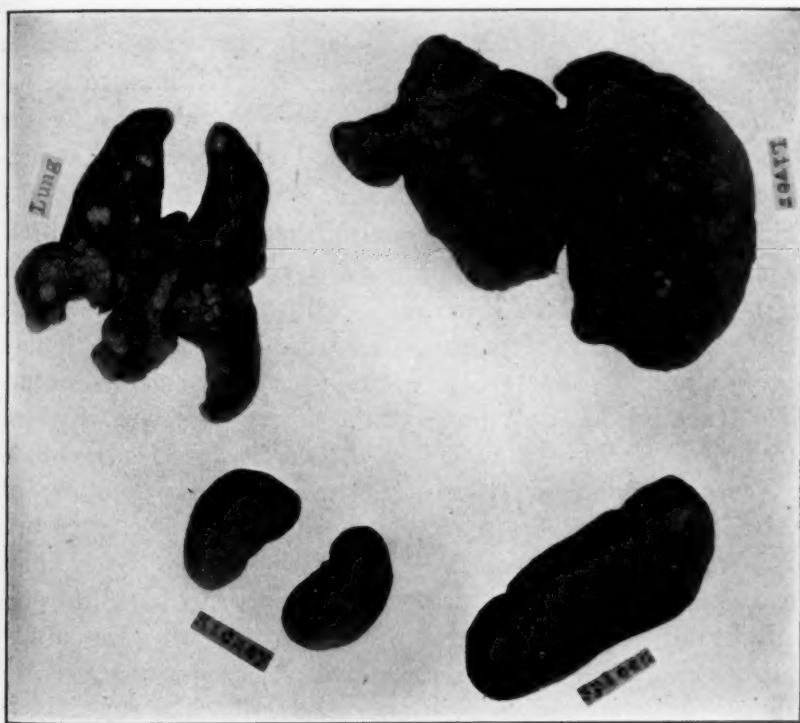


PLATE II.—Lesions caused by udder bacillus.

pale yellow or dirty white areas that seem to be due to an enormous proliferation of connective tissue and a consequent crowding out and obliteration of the liver cells proper; a diffuse, parenchymatous nephritis that reaches stages in which dense, fibrous nodules are formed in the cortex of the kidneys, and, in male Guinea pigs, a degeneration of the testicles, commonly beginning in the epididymis and often resulting in the conversion of one or both testicles into structureless cysts filled with creamy

pus. When the disease is due to the subcutaneous inoculation of pure cultures, there are no local lesions or pathological conditions referable to the point at which the inoculation was made.

In a small but not inconsiderable proportion of the infected Guinea pigs a curious enlargement about some of the bone articulations occurs, through which the affected joint becomes stiff and useless. This condition is especially interesting from the bacteriological point of view, because, in the several cases in which careful examinations were made, it was found to be associated with a fairly large micrococcus, thus forecasting the possibility, as the condition has never occurred among the numerous other Guinea pigs we have had under observation at the Experiment Station, of a micro-organism that is harmless by itself but capable of doing serious injury in symbiosis with another micro-organism. That this is not altogether a hypothetical view, but rather an inference drawn from experimental, though as yet, admittedly, inadequate evidence, is shown by the occurrence of the joint disease in one of six Guinea pigs, two of which were injected with a pure culture of the bacillus, two with a pure culture of the micrococcus and two with mixed cultures of the bacillus and the micrococcus. It was one of the latter two that became affected with the joint disease. The two Guinea pigs injected with pure culture of the micrococcus remained perfectly healthy, and the four, of which two received pure culture of the bacillus and two mixed cultures of the two bacteria, in addition to the joint disease in one, all developed the characteristic lesions the bacillus causes in Guinea pigs.

Probably the most remarkable thing about the bacillus is its expulsion from the bodies of apparently healthy cows with their milk, and hence it is desirable to show that this is really a fact and not a supposition backed by doubtful evidence. First, the bacillus was repeatedly proven to occur in milk, collected with the utmost precautions against extraneous contamination, from a number of cows that had previously been found to be infected; and second, its presence in the milk, and in tissue from



the udder and supramammary lymph gland of one cow was proven in the following manner:

Station Cow No. 220, which had been known for some time through the injection of her milk into Guinea pigs to be infected, was killed. Immediately before her death her udder was care-

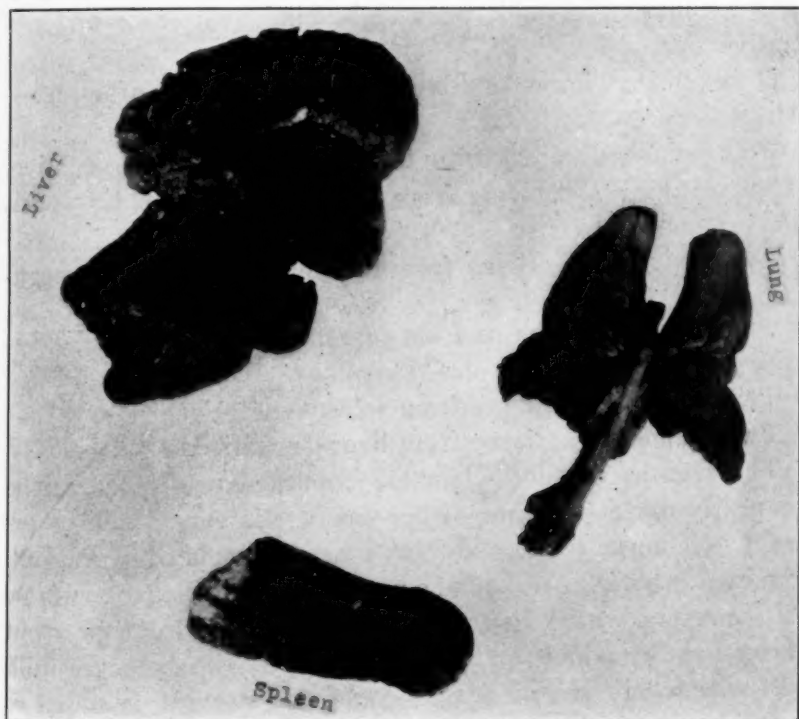


PLATE III.—Lesions caused by udder bacillus and tubercle bacillus mixed.

fully washed and disinfected and her teats closed with strong ligatures, and directly after her death her udder, including the supramammary lymph glands, was cut from her body. The skin was then dissected from the udder, and the entire denuded surface thoroughly scorched with the flame of a large Bunsen burner; the flamed surface was next incised with a sterile knife and milk collected in sterile pipettes, through the incisions, separately from each quarter, at points well removed from the teats. With

equal precautions fragments of tissue were taken from one front and one hind quarter of the udder, from the supramammary lymph gland, and from the liver and the spleen, and this material inoculated subcutaneously into 15 Guinea pigs as follows:

One Guinea pig, milk from right front quarter of udder—positive.

One Guinea pig, milk from right hind quarter of udder—negative.

One Guinea pig, milk from left front quarter of udder—positive.

Two Guinea pigs, milk from hind quarter of udder—negative.

Two Guinea pigs, tissue from front quarter of udder—positive.

Two Guinea pigs, tissue from hind quarter of udder—negative.

Two Guinea pigs, tissue from supramammary lymph gland—positive.

Two Guinea pigs, tissue from spleen—negative.

Two Guinea pigs, tissue from liver—negative.

The quantity of milk obtainable from the cow's udder, as she was nearly dry at the time of her death, was very small, otherwise two Guinea pigs would have been inoculated with milk from each quarter. It should be noted that the inoculations show positive results with both the milk and the tissue from the front quarters of the udder, and negative results with both the milk and tissue from the hind quarters, and that strength is added to the evidence which proves that the germ was located in the depths of the udder by the positive results obtained with the inoculation of tissue from the supramammary lymph gland.

The post mortem examination of the cow revealed nothing to explain the persistent occurrence of the bacillus in her milk, excepting a few small areas of slight induration in her udder. A second cow that also expelled the bacillus with her milk has been killed, examined post mortem and material obtained from her body for Guinea pig injections. The autopsy showed no other lesions than were found in the first cow, and it is too early to

report on the Guinea pigs. It may be well to add that the blood and urine of several cows from which infected milk was obtained were tested by inoculating Guinea pigs, and invariably failed to cause disease.

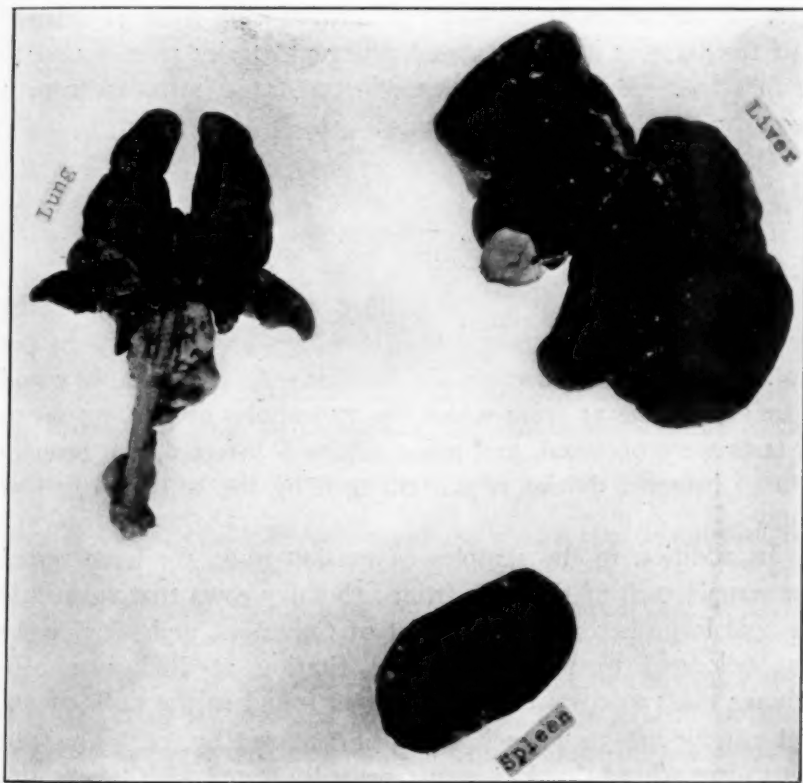


PLATE IV.—Lesions caused by tubercle bacillus.

Some studies relative to the way in which the udders of cows become infected have been made. In this connection several cows were selected and proved by repeated injections of their milk into the abdominal cavities of Guinea pigs to be free from the infection. On the udder and teats of one cow pure cultures of the bacillus were rubbed; another cow was fed pure cultures in her drinking water, and a third was given subcutaneous injections of

pure cultures. This work is not yet complete, but as far as it has gone it has given negative results.

The frequency with which we found the bacillus to occur in ordinary market milk is illustrated by the samples we have examined since we first observed the curious disease in Guinea pigs. In one series we tested 77 samples of milk from 31 dairies; 8 of the samples derived from 6 different dairies were found to be infected. In another series we tested 140 samples from 4 dairies, with the following results:

Dairy a, 35 samples, 11 infected.

Dairy b, 33 samples, 7 infected.

Dairy c, 34 samples, 2 infected.

Dairy d, 38 samples, 2 infected.

The 77 samples in the first series of tests, with the 140 in the second, make a total of 217, among which 30, or nearly 14 per cent. were proven to contain the bacillus. As dairies a, b, c and d are among the 31 from which the 77 samples of the first series of tests were obtained, and are 4 of the 6 infected, the proportion of infected dairies is not changed by the second series of tests.

In addition to the samples of market milk, we have tested one sample each of the milk from 140 dairy cows that constitute a single large herd in the District of Columbia, and of 36 cows that belonged to the Experiment Station at Bethesda, Md. Among the 140 cows the bacillus was found in the milk of 19, and among the 36 cows it was being passed by 11. The 140 cows form a herd that has been repeatedly tested with tuberculin, and which is very probably free from tuberculosis. A large proportion of the 36 Station cows was affected with advanced tuberculosis, and among the 11 that were found to be passing the bacillus, 8 were advanced cases of tuberculosis, 1 was affected with actinomycosis and 2 were apparently healthy.

One of the tuberculous cows at the Station that was passing the bacillus was affected with tuberculous disease of her udder. Her milk caused both tuberculosis and the other disease in the Guinea pigs injected with it, showing that the two diseases can

live in harmony in one animal body; in fact, each seemed to increase the pernicious potency of the other. Guinea pigs with the double infection formed interesting subjects, because the tubercle bacillus in their lesions could easily be demonstrated in stained preparations, while the other bacillus, which was microscopically



PLATE V.—Spleen of guinea pig affected with tuberculosis in combination with udder bacillus disease.

Weight of spleen, 31 grams. Normal weight of guinea pig spleen, less than 1 gram.

invisible to us, could be cultivated on media that is unsuitable for the tubercle bacillus.

What the real significance or practical importance of this apparently newly discovered bacillus, which appears to have escaped detection in the past very likely because of the difficulties associated with its artificial cultivation and the length of time it requires to cause well-marked lesions in Guinea pigs, may ultimately prove to be, we are unable to say. But no one can doubt that the common occurrence of a micro-organism, pathogenic for any species of animal, in an article of food as widely and as extensively used as milk, deserves that we should study it with the greatest care, especially after it has been shown that it is an organism which has the udders of apparently healthy cows as its normal habitat, and which, therefore, cannot be certainly excluded from milk, no matter how much cleanliness and care are used in its production. In this sense the germ forms another link in the long chain of facts that point, unmistakably, to the



proper pasteurization of all milk, before it is used as food, as a measure essentially necessary for the protection of public health.

#### DESCRIPTION OF PLATES.

The organs shown in the plates are all from Guinea pigs, and are of natural size.

Plate I. Lesions caused by udder bacillus. The testicle is necrotic throughout, excepting the dark lines, which are bands of connective tissue. The white spots in the kidneys are fibrous nodules in the degenerated cortex.

Plate II. Lesions caused by udder bacillus. The white spots in the lung are an advanced stage of a condition which first manifests itself in the form of very minute, glistening, almost transparent nodules, which gradually increase in size, develop gray centers, and finally become comparatively large necrotic areas.

Plate III. Lesions caused by udder bacillus in combination with the tubercle bacillus. Each bacillus seems to increase the pathogenic potency of the other for Guinea pigs.

Plate IV. Lesions caused by the tubercle bacillus. A comparison of this plate with Plates I. and II. will show the remarkable similarity in the microscopic appearance of the lesions caused in Guinea pigs by the udder bacillus and the tubercle bacillus.

Plate V. Spleen affected with tuberculosis in combination with the disease caused by the udder bacillus. The organ weighed more than 40 times as much as a normal Guinea pig spleen, and its enormous size is due to the udder bacillus.

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DR. D. WARNOCK (M.R.C.V.S.), Pincher Creek, Alberta, Can., was elected a member of the Federal House of Commons to represent McLeod Federal Constituency, after sitting two years in the Alberta Legislature as member for Pincher Creek Riding. He was the Liberal or reciprocity candidate on the recent election for McLeod Constituency and carried the state by a majority of 819.

## POLL-EVIL.\*

By R. C. MOORE, KANSAS CITY VETERINARY COLLEGE, KANSAS CITY, MO.

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Poll-evil is one of the very common ailments of the horse and consists of an inflammation of the poll or anterior part of the top of the neck from the occipital crest to the posterior end of the axis. It is at first acute but becomes chronic, and later there is often suppuration and necrosis of the ligamentum nuchæ.

*Etiology.*—It invariably results from an injury. The tissues are bruised by striking the top of the head against the ceilings of low stables, tops of low doors, limbs of trees, by falling on the hard ground or stony road, by getting the head fast in doors, fences, mangers and like places, or by blows from clubs, etc.

*Tissues Involved.*—The bursa of the ligamentum nuchæ where the ligament passes over the spine of the dentata, the ligamentum nuchæ, cellular tissue, fasciæ, bones, articulations and meninges are the tissues usually involved in this condition.

*Course.*—Bruising of the tissues of this region is followed by an outpouring of serum, either into the bursa of the ligamentum nuchæ, distending its walls, or the fluid becomes accumulated in the cellular tissue, forming a hygroma. The swelling is circumscribed with a more or less prominent demarcation between the distended parts and the surrounding tissues, and there is usually a limited amount of heat and little or no increased sensitiveness. If the injury is mild, does not become infected and is not repeated, resolution by absorption will most likely follow. The absorption may be only partial and be succeeded by organization of the serum, thus leaving a hard, fibrous mass, sometimes called the chronic form, which diminishes in size but becomes more dense and firm.

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\* Presented at the Forty-eighth Annual Convention of the American Veterinary Medical Association, Toronto, Can., August, 1911.

In chronic bursitis, the bursal wall undergoes a change, that is, it becomes thickened. Substances resembling grains of rice, called oryzoids, become detached from the wall and sometimes nearly fill the cavity. When the bursa is opened, a quantity of serum, more or less bloody, escapes, which may contain oryzoids.

Infection may occur through the skin or by metastasis through the blood or lymph, and the swelling increase and become more diffused. The line of demarcation of the bursa disappears, the entire region is swollen, hot and painful, and the animal, dreading to move, stands with nose protruded. The cutaneous lymph vessels over the region become distended, appearing as raised lines in the skin, which usually radiate from a common centre. Later fluctuation may be noted on palpation.

The swelling may be on one or both sides. The abscess is usually central, the variations of the swelling being due to the difference in tissue resistance of the two sides.

The pus is sooner or later liberated by necrosis of the cutaneous tissues at the point of least resistance. Fistulous tracts, necrosis of the fascias and the ligamentum nuchæ, are produced by filtration of pus through the surrounding cellular tissue, and this is accompanied by a copious discharge of pus having a disagreeable odor. The fistulous tracts may extend to the vertebrae, penetrate the bones, even involve the spinal meninges and produce death by septic meningitis, or the inflammation may extend to the articulations, thus causing arthritis, which may result in ankylosis of either the occipito-atloid or the atlo-axoid articulations, or both, producing stiff neck.

*Prognosis.*—Prognosis of poll-evil has always been more or less doubtful, convalescence being so slow and the animal so often left blemished, with more or less danger of a return of the disease, that its value is greatly depreciated. The care and expense of treatment is so great as to make the financial consideration a problem to both the owner and the practitioner.

The chief cause for the long continuation of the disease is to be found first in the difficulty of establishing and maintaining

perfect, free and easy drainage of the deep parts involved. It should be understood that such drainage does not consist in an opening into a pus cavity through which pus will flow out by pressure of surrounding parts, or as a vessel will overflow when more fluid is forced into it than it can contain, but rather consists in an opening from the very lowest point, downward and outward, so free from obstruction that wound secretions and pus cannot remain in the wound and pus cavity. Low power of resistance to the necrosing action of pus is perhaps nowhere more marked than in the ligamentum nuchæ and is a factor in making the prognosis doubtful.

If purulent and necrotic changes have not taken place, and if asepsis be maintained and the injury is not repeated, absorption of the tissue fragments and inflammatory exudate with complete resolution usually occurs, and this is made more certain by the late method of controlling or preventing pus formation by the use of bacterins.

*Treatment.*—Perhaps no ill to which the horse is heir has been subject to so great a variety of treatments as poll-evil. Everything that the human mind could conceive, from pouring pounded glass in the ears, putting setons in the tail or destroying the tissues of the poll with caustic, to the later and most approved methods of surgery, have been resorted to. The chief results in a large per cent. of cases treated have been to intensify and prolong the poor animal's suffering.

The scientific treatment of poll-evil, as of many other diseases, should always depend largely upon the state of the disease. The application of remedial methods indicated in the non-suppurative stage would be of little value in the infective inflammatory condition; and the operative surgical treatment of a case in the non-infective stage, which would be indispensable in the suppurative and necrotic stage, would not only be unnecessary but detrimental as well, and greatly increase the animal's suffering.

In the early stage and in a case where there is no infection, as evidenced by the absence of pain, heat or distended cutaneous lymph vessels, and more particularly if the outline of the dis-

tended bursa or hygroma is well defined, treatment should be given that will assist nature to absorb the exudate and prevent pus formation. This may be accomplished by keeping the region cool and as near aseptic as possible, supplemented by the subcutaneous administrations of bacterins at intervals of four to six days. The region may be kept cool by the application of ice packs over the poll, which may be conveniently made by mixing bran and cracked ice in a neat bag, tied to the head-stall and under the throat. After a lapse of three or four days, the cold packs may be supplemented by the application of tincture of iodine or iodine liniments. If this treatment is adhered to and the injury is not repeated, absorption is usually rapid and complete.

If some organization of serum takes place and fibrous enlargements result, blistering with biniodine or mercury ointment at intervals of two to four weeks will be beneficial. Aspiration is rarely if ever beneficial and increases the danger of infection.

*Radical Surgical Treatment.*—If the foregoing treatment fails to produce absorption, or if infection has taken place with abscess formation or necrosis, or if there already exists a fistulous tract, then radical surgical treatment is indicated and no time should be lost in executing it. Here three essential surgical features should be observed and rigidly carried out:

First—Removal of all necrotic tissue.

Second—Establishing and maintaining perfect, free and easy drainage from the deepest part of the fistula.

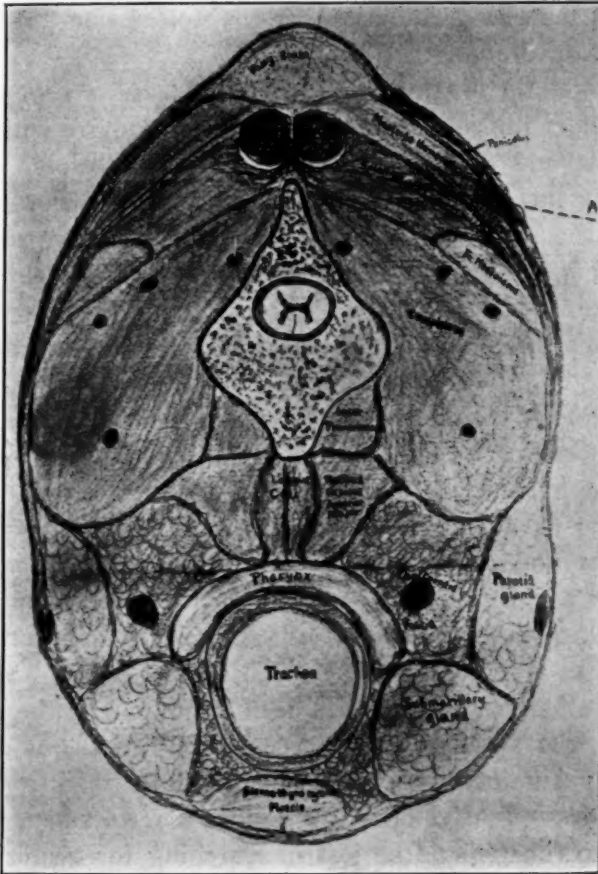
Third—Keeping the parts clean and as near aseptic as possible.

The first difficulty the surgeon encounters where the ligamentum nuchæ has not become necrotic, is to establish drainage to the space between the two cordiform parts of the ligament.

By viewing a cross section of the poll, it will be seen that the inferior surface of each rounded ligamentum nuchæ rests on a lower plane than their internal borders where the two cords contact each other, thus leaving an elevation, as it were, in the floor of the bursa extending between the cords. The space thus



formed is filled with loose cellular tissue, and when there is sup-  
puration, the pus is retained by the pressure of each cord on the  
floor of its respective side of the bursa. Pus thus imprisoned  
often burrows along between the two cords to the occiput, and  
may extend backward and invade the lamellar portion of the



CROSS SECTION OF THE NECK OF THE HORSE  
THROUGH THE AXIS.

ligament, producing deep-seated abscesses in the sides of the  
neck as well as necrosis of any part of the ligament.

Early drainage of this space will usually prevent necrosis.  
The writer has frequently discovered such abscesses between the

two cords by forcing the finger through a fistulous tract that passed beneath the ligament. The flow of pus immediately ceased when the finger was removed, showing that the ligament acted as an obstruction. To drain this region it is necessary to divide one cord of the ligament and carry the incision outward, downward and backward, cutting through the skin, fascia and underlying muscles as indicated by the dotted line "A" in the accompanying drawing.

To divide the ligament it is best to pass a probe-pointed bistoury under the cordiform portion at its juncture with the fistulous tract and divide it transversely from below, upward, carrying the incision outward and upward through all the tissues, including the skin. This may be accomplished by restraining the animal with a twitch. Some hæmorrhage will follow, but it is easily controlled by torsion. Careful attention should be paid to antisepsis, both during the operation and in the after-treatment.

The wound should be carefully observed each day, and if increased swelling or extensive granulations obstruct the drainage, the outlet must be deepened and widened to suit.

As long as the ligament remains sound, it conveys a sense of firmness and smoothness to the finger when palpated, but should any part of it become necrotic, it has a soft, doughy feeling, in which case the wound discharge continues profuse, is thin and has a very offensive odor.

When all necrotic tissue has been removed and the drainage is perfect, the swelling and soreness diminishes, pus decreases in quantity but increases in density, becomes thick and yellow and has a less offensive odor. When these results have not been secured, no time should be lost in searching for necrotic tissue, or undrained fistulous tracts, which must be removed, drained or opened, as the case may be.

A part of one or both cords of the ligamentum nuchæ may be necrotic, and when this occurs, all diseased parts must be excised. This is best done by placing the horse in the lateral, decubital position (preferably on an operating table) and main-

taining complete anæsthesia. The hair is shaved from the occipital crest back to the posterior end of the axis and well down on each side of the neck; thoroughly cleaning and disinfecting the operative field; making a longitudinal incision in the median line from the occipital crest back beyond the probable extent of the necrosed ligament (keeping in mind that it is far better to remove some of the sound tissue than to leave the least trace of necrotic substance); carrying the incision down through the cutaneous and subcutaneous tissue to the cordiform part of the ligamentum nuchæ; separating the ligament from its fellow and the surrounding tissue; dividing it obliquely from below upward and backward to insure the removal of all diseased tissue, then carefully detaching it from the occipital bone. If the other cord is diseased, it is to be treated in like manner. Drainage is secured by making an incision from the very posterior end of the longitudinal incision outward, downward and backward through the tissues described heretofore, being careful to make it in such direction as to insure the covering of the scar by the overlapping of the hair. One such incision will answer for both sides. If only one cord is removed, the drainage incision must be on the same side; if both cords are removed, then the drainage incision may be on either side. All other things being equal, it is best to make it on the side that is covered by the mane, as the scar will be less noticeable. In all cases the drainage incision must be made through the skin and subcutaneous tissues deep enough and wide enough to insure free and easy drainage. The operator should control all hæmorrhage, pack the wound with sterile gauze and close all but the drainage incision by suture, which should be removed the next day, and then the wound may be irrigated daily for fifteen to twenty minutes with formalin solution, using one part of formalin to one thousand parts of water. All irritating substances and caustics or escharotics are contra-indicated and should never be used. When caustic agents are introduced into fistulous tracts about the poll or withers of the horse, they destroy more or less of the yellow elastic tissue which does not readily separate from the sound

parts, thus leaving fragments of diseased tissue extending into the ligament between the healthy fibres, which favors abscess formation. This is often the cause of a recurrence of the disease, even months after the patient has apparently recovered.

*The Use of Bacterins.*—Probably no other step in the forward stride of modern medicine and surgery has proven of more value in the after treatment of surgical wounds, abscesses, fistulæ, necrosis and suppurating conditions in general, than properly prepared bacterins, and no practitioner of medicine realizes their need more than the veterinarian, because of the difficulty in maintaining asepsis in his patients. But in such cases as described above, they will only be beneficial when used in connection with such surgical procedure as will insure the removal of all necrotic tissues and afford and maintain perfect wound drainage.

Provided the disease has not extended to the bone, articulations, or to the lamellar portions of the ligamentum nuchæ, the prognosis is favorable if treatment is carefully carried out along the lines indicated.

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DR. W. E. STRIBLING, B. A. I., has been transferred from Manila, P. I., to Earlham, Iowa, which place he will probably reach about November 1.

AN IMPORTANT DATE.—As a reminder of the notice published in the September REVIEW, the United States Live Stock Sanitary Association will hold its fifteenth annual meeting December 5 and 6, in Chicago.

DR. H. PRESTON HOSKINS, Philadelphia, has gone to St. Paul, Minnesota, where he will be associated with Prof. M. H. Reynolds, Division of Veterinary Medicine, at the University of Minnesota College of Agriculture and Experiment Station. We congratulate Dr. Hoskins on his association with such a thorough, painstaking investigator and honorable gentleman as Prof. Reynolds.

## **OBSERVATION ON THE MERITS AND PRACTICABILITY OF RESECTION OF THE FLEXOR PEDIS PERFORANS TENDON, FOR THE RELIEF OF OPEN NAVICULAR BURSA AND BAYER'S OPERATION FOR QUITTOR.\***

BY GEO. H. BERN, D.V.S., BROOKLYN, N. Y.

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### **RESECTION OF THE PERFORANS TENDON.**

This operation was described by Andre De Fleurens as early as 1853, by Nocard 1879, by Lustig, Froehner, Cadiat, Moller, Pfeiffer, Hess and others of France and Germany, and by W. L. Williams and L. A. Merillat of this country more recently. Strange as it may seem, it has received but scant recognition by the veterinary profession at large, and but few practitioners have availed themselves of its many advantages. However, this is not to be wondered at when we consider the formidable character of the operation and the functional importance of the structures involved; when we are told in our text books describing the technique to remove the horny frog, remove the entire sensitive frog, completely divide the flexor perforans tendon transversely, remove its distal end from the semi-lunar crest, expose the navicular bone, destroy its beautiful gliding surface by curetting away its cartilage of incrustation, the conservative veterinarian naturally hesitates; for he fails to see how a satisfactory recovery can possibly take place when these important structures have been either entirely removed or mutilated to such an extent as to completely destroy their functions. He remembers his unsuccessful attempt at treatment in accidental ruptures of the perforans tendons in cases of breakdown, and the persistent lameness and unsatisfactory termination in all cases of navicular disease, and is very apt to conclude that at best only a partial

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\* Presented at the Forty-eighth Annual Convention of the American Veterinary Medical Association, Toronto, Can., August, 1911.



recovery can reasonably be expected and that it will take months to accomplish this result, and therefore considers the operation of no practical value.

I was very much in this frame of mind when W. L. Williams visited Brooklyn in 1904, made his headquarters at our hospital, and remained a month with us to study veterinary practice in a large city. A number of bad foot cases, quittors, horn tumors, fractured bars, suppurating corns, centre and quarter cracks and punctured nail wounds of the plantar surface were admitted and operated upon during this time. Among them were five or six cases of what were diagnosed as open coffin joints, characterized by excessive lameness, discharge of synovia from the puncture, and more or less elevation of temperature. Our experience with cases of this kind had been extremely unsatisfactory, losing probably ninety per cent., and securing very tedious and probably only partial recoveries in ten per cent. The fatal cases were put down as articular synovitis and considered hopeless from the start, while those that recovered were diagnosed as tendonous synovitis, with a chance to recover if the articulation did not become involved, but as it was impossible to distinguish between the two conditions in the early stages, all were kept under treatment, until the cases became either positively hopeless from infection of the entire sensitive structure of the foot, gangrene and casting off of the horny shell or infection of the entire limb and were destroyed; or the few in which the synovial discharges were supposed to come from the tendon sheath were preserved with, and if the sound foot on the opposite side did not develop acute laminitis or breakdown at the fetlock, which frequently happened if a hind foot was affected, it would take weeks or months to restore the animal to even partial usefulness.

There were two bad cases of open coffin joint admitted to the hospital during the first few days Dr. Williams was with us. He advised complete resection of the perforans tendon and kindly volunteered to perform the operation. One animal, as I recall the circumstance, had a temperature of about 105, hopped

on three legs if made to move, and kept the affected foot constantly in motion, and indication of intense pain was plainly depicted on his countenance. There was no synovial discharge from the puncture, but as near as could be determined under the circumstances, probing of the wound pointed to the articulation.

The hopeless condition of the poor horse and my confidence in Williams as an operator prompted me to reluctantly consent to the operation.

The animal was placed upon the operating table, anæsthetized and operated upon by W. L. Williams as described in his little work on "Operative Veterinary Surgery." When the fibro fatty frog had been removed the puncture through the tendon was plainly visible, and when the transverse division of the tendon was attempted, a quantity of purulent synovia, which had been securely pent up, escaped with sufficient force as to cover the front of the operator's gown. After the tendon had been divided and removed from its attachment to the semi-lunar crest and the navicular bone exposed, the spot where the nail had entered was plainly indicated by discoloration and a small depression in the cartilage of incrustation of the navicular bone. The operation was completed in about forty-five minutes and the patient regained his feet in one hour and thirty minutes and walked to his box stall, a distance of about fifty feet, showing but little lameness, which, of course, was due to the anæsthetic effect produced by the use of the elastic tourniquet which had been employed. Patient enjoyed a good night's rest and the following morning he was very comfortable. He got up without assistance, temperature down to 101, and ready for his breakfast. His temperature was taken regularly twice a day and it ranged from 99 to 101. His appetite was good and on the tenth day he began to place a little weight upon the point of the toe when forced to move. He was led to the dressing floor, a distance of about fifty feet, without very much trouble; all the dressings were removed; the wound presented a perfectly healthy appearance, and the iodoform which had been placed in the wound was practically dry, indicating that no suppuration had

taken place. The foot was dressed antiseptically every two days and the healing process carefully watched. At the expiration of three weeks a shoe was applied and the dressings retained in position by means of pieces of hoop iron wedged under the web of the shoe.

In a month the wound had almost completely healed and in five weeks the patient walked home, a distance of nearly two miles. In about two months he showed no lameness on a walk and was ordered to slow work. In three months all the lameness had disappeared and he not only walked but trotted sound and he is to this day doing his work regularly, hauling heavy loads of brick for the John Morton Co., of Brooklyn, who are his owners.

His new frog is small and imperfect, but the bars appear much stronger and better developed than ordinarily. The foot is fully as large as its fellows and shows no deformity externally.

The second case was operated on two or three days later, and the operation was witnessed by a number of prominent Brooklyn and New York veterinarians, who had been invited with Dr. Williams' consent, to see this new and untried method demonstrated. Some were so favorably impressed that they sent over cases of their own, and I think five or six cases of open navicular bursa were operated on by Williams during the first ten days or two weeks. One horse developed inhalation pneumonia and died three days after the operation, but all the rest made satisfactory recoveries within two or three months.

Two other cases with serious complications were presented for operation; one proved to be an open and badly infected coronae pedal articulation, and the other was complicated with infection of the tendon sheath and multiple abscesses. Both animals were placed upon the table for examination, and when their true condition was discovered they were promptly destroyed.

Encouraged by Dr. Williams' success, we started in to practice this radical operation in September, 1904, and we are still

doing it. Several hundred horses have been operated upon, and the results have been most gratifying. While we have not kept accurate account of the number of cases and terminations of each, I think I am safe in saying that fully eighty per cent. made uneventful and complete recoveries in from two to four months; five per cent. developed abscess of the tendon sheath in the hollow of the heel, and while most of them got well eventually, this complication prolonged convalescence for a month or two. Ten per cent. had to be destroyed within a week or two after the operation, by reason of open and infected coronae pedal articulation, which had been overlooked if they existed, accidentally sustained and not noticed during operation, or had been infected prior to operation and showed no indications of it. The other five per cent. developed contraction of the heels and persistent lameness from this cause, which, however, was readily controlled by the application of hoof-expanding springs under the shoes.

#### INDICATIONS FOR THE OPERATION.

All cases of punctured nail wounds of the plantar surface from which there is a discharge of synovial fluid should be operated upon without delay. Every nail puncture in the vicinity of the joint or bursa which shows no improvement under ordinary treatment in a week, and patient develops an elevation of temperature from this cause, even if there is no synovial discharge, should be placed in stocks or upon the operating table for examination, or operation, if necessary.

It frequently happens that a sort of a valvular opening into the bursa exists, and that quantities of purulent synovia are pent up, which, if left undisturbed, not only cause most intense pain, but are sure to produce destructive changes in the neighboring tissues of a most serious character, and what in the earlier stages is a curable condition is rapidly converted into an incurable one. If the bursa is not involved there is no harm done even if all the horny frog and a good-sized portion of the fibro fatty frog is removed and the plantar aponeurosis exposed, for

it is more than likely that the tendon has been injured and requires attention.

In chronic suppurating corns, necrosis of the wing of the pedal bone, ulcerating and fractured bars, we occasionally have the bursa infected, which is characterized by excessive lameness, great pain or twisting or rotating the toe, more or less elevation of temperature, and probably a discharge of synovia; this operation is of the greatest value, and frequently enables us to restore practically hopeless cases to usefulness.

*Prognosis.*—Favorable if the corono-pedal articulation is not involved; and it is a clinical fact that in four cases out of five the bursa only is punctured. If, on the other hand, the joint is open and discharging purulent synovia, the case is hopeless and should be destroyed at once. This condition can only be determined in the early stages by this operation, which enables the surgeon to forecast the probable termination of the case, with a great degree of certainty; and in our practice we make it a point to obtain the owner's consent to destroy the horse, if the operation reveals that the case is hopeless. The termination of all these cases depends to a large extent upon the skill and care of the surgeon, the environments under which the patient is operated upon and kept after operation, and the disposition and temperament of the patient; cleanly surroundings and proper facilities are necessary, and I consider an operating table and a loose box stall containing a bed of peat moss ten or twelve inches deep, almost indispensable.

Horses of a nervous temperament will frequently stand up persistently, and incessantly try to place weight upon the affected foot, and work themselves up to a state of excitement bordering on delirium.

Dunghills and lymphatic brutes will, after one or two feeble and unsuccessful attempts to rise, lose all courage and helplessly flounder about the stall, strike the heads violently upon the floor, tear or scrape off the dressings you have so carefully applied, make no real effort to get on their feet, and do all but commit



suicide, but, fortunately, the vast majority of horses accept conditions as they exist and take excellent care of the sore feet.

This operation, perhaps more than any other, demonstrates the wonderful reparative powers of nature, for these animals as a rule make perfect recoveries and show no lameness nor defective action. This applies to the ordinary business horse only, as far as our knowledge goes, for we have had no experience with high-stepping coachers, hunters, runners or trotters.

I forgot to mention a slight change in the technique, which we consider of some importance. We save a small strip  $\frac{1}{4}$  to  $\frac{3}{8}$  of an inch of the horn secreting fibro fatty frog on each side of the pyramid, which, while it affords ample room to complete the operation, greatly facilitates the healing process and leaves the horse with a much larger and stronger frog.

#### BAYER'S OPERATION FOR QUITTOR.

As I have already taken up too much valuable time, I shall refer to this operation very briefly and confine myself chiefly to results.

This operation was also demonstrated by W. L. Williams in Brooklyn in 1904, and has been practiced by us to a very considerable extent since that time.

*Indications.*—Seven years' experience has convinced us that this operation is indicated in all quittors of comparative recent origin in which no great structural changes of the skin and subcutaneous cellular connective tissues covering the cartilage have taken place; and if the operation is skillfully and carefully performed under cleanly surroundings and proper facilities, healing by first intention of the incisions through the coronary band, skin and laminal structures, will follow in nine cases out of ten. The animal will be fit for work in a month or six weeks, and at the expiration of from nine to ten months, nothing but the slight scars in the skin above the coronet will indicate that the foot was ever operated on.

It is contra-indicated in all quittors of long standing that have been unsuccessfully treated, with caustics and escharotics,

which not only destroyed parts of the cororary band and left a large portion of the skin and underlying structures a mass of cicatricial tissues, but by intermittent and prolonged irritation caused complete degeneration, hypertrophy and a general loss of vitality and reparative powers of the parts involved. In such cases the radical operation of Bayer is very apt to be followed by troublesome quarter cracks, ringbones, sloughing of the flap and possibly open joint. Dr. Moore's modification of Bayer's operation, or Dr. Merillat's new operation for quittor, will certainly answer a much better purpose.

We believe that most all quittors are benefited by operative intervention, but as their conditions vary to such a very great extent, it is impossible to lay down hard and fast rules for all cases; for what proves highly successful in the hands of one man is often a total failure in the hands of another.

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DR. WARD GILTNER, assistant bacteriologist at the Michigan Agricultural College, has been appointed state veterinarian for that state.

THE first-year class at the Ontario Veterinary College this year is larger than last year; it was making a strong run for the century mark at the last report.

HON. H. H. HALLADAY, of Clinton, Mich., has been appointed on the Michigan Live-Stock Sanitary Commission in place of Mr. C. A. Tyler, whose term expired in July.

DIDN'T HAVE TO BE.—*Puck*:—New Suburbanite—I suppose this is pasteurized milk, my friend?

Village Milkman (witheringly)—Not so's ye kin taste it, I reckon, mister. In fact, I'll hand ye a five dollar note if ye kin prove any uv my cows wuz bit by a mad dog!—(*New York Herald.*)

## CAUSE AND TREATMENT OF PULMONARY EMPHYSEMA.\*

BY WALTER G. HOLLINGWORTH, UTICA, N. Y.

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In going over the literature, I find that the exact causes are rather a problem. Authors do not agree on all conditions, but what they agree on is, that pulmonary emphysema, if not the most influential, is the most frequent of the proximate causes. The most noted writers say that broken wind is at first purely a nervous affection, dependent on the unhealthy condition of the digestive tract, brought about by neglect of diet; and the pathological lesions are to be attributed to the effects of the nervous disease, which especially involves the pneumogastric nerves. A portion of the structure of the small bronchi is composed of a continuous layer of muscular tissue. Klein says the layer is especially conspicuous and important in the small bronchi, and by contracting, aids the expulsion of the air from the lungs in expiration; and when this muscular tissue undergoes pathological changes due to the irritation of the gastric branches of the pneumogastric largely, and reflected through the pulmonary branches of this same nerve to the lungs, the contractile power of this muscle is greatly lessened, and to force out the air from the distended or ruptured cells requires the long-continued or double expiration which is characteristic of chronic vesicular emphysema and broken wind. This view of broken wind seems to be more strongly insisted upon by the various teachers and writers of veterinary medicine. Pulmonary emphysema may be of different types; that is, the acute and chronic vesicular, and the interlobular. The acute vesicular type is a dilatation of the alveoli beyond its normal condition without any change of struc-

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\* Presented at the Forty-eighth Annual Convention of the American Veterinary Medical Association, Toronto, Can., August, 1911.

ture; it may spread over the whole lung or lungs, though rarely, or it may affect only certain lobes. Partial emphysema often occurs when other parts of the lung becomes impermeable, especially during chronic bronchitis. This form of emphysema has no clinical importance as a rule, and if recognized, relief will be the outcome as no structural changes have developed. If long continued, the contractile power of the muscle (bronchial), or its function being impaired, may lead to chronic or subacute type; and this is due to an enlargement of the alveoli. According to Stömmmer, who has very carefully studied this disease, the alveoli has increased in size from  $1/150$  to  $1/16$  inch. Now, to draw the line between the acute and chronic vesicular forms of emphysema, is a question in my mind. And these forms will lead to the interlobular type, but the interlobular type may occur independently of the vesicular type. Interlobular emphysema is an extravasation of air into the connective tissue between the lobules owing to the rupture of the air cells and small bronchials. What is the cause of this dyspnœa; that is, the peculiar condition of the expiration? Is it due to the emphysema or from some impairment of the normal contraction of the pulmonary tissue? This secondary prolonged contraction of the abdominal muscles is an effort to expel the air in the bronchi left after the regular expiratory act, and the cough that is so frequently noticed usually one characteristic exertion—once heard, always remembered—is an expulsive act to rid the extra amount of mucus or secretion in the air passages. It is a reflex nervous action. It is the opinion of some writers, and I have noticed it myself, that vesicular emphysema does exist many times, but which has not at any period exhibited any symptoms indicative of the condition known as broken wind. What I have noticed is a prolonged expiratory act which should be looked for in examinations of soundness, and it is useless for me to say that this is a condition of much importance. To what extent are horses liable to the vesicular type, which consists of the dilation of air cells, and how far the same may tend to induce broken wind, is a question. Delefond mentions that both the vesicular types are

proximate causes of broken wind; taking these conditions into consideration, it seems to me there are certain points which should be answered. It is needful that we determine whether these emphysematous conditions are invariably present in the lungs of all horses affected with broken wind, and if so, whether these textual changes in its extent bears direct relations to the severity of the symptoms exhibited during life. Also whether every case of emphysema has been coincident with the phenomena usually understood to constitute broken wind.

This difference in the character and extent of the impediment of the expiration met with in the different stages of this disease may be supposed that at first the muscular structure of the minute bronchi are merely spasmodically stretched, and that at a more advanced stage of the disease they become structurally altered. Prof. Law says progress of cultivation in our western lands is increasing this malady. Fifty years ago it was virtually unknown in Michigan and adjacent states, where now it can equal New York State. He also says it is a notorious fact that no horse becomes broken winded that has always been out to pasture.

Prof. Coleman mentions that why horses are more liable to broken wind is to be accounted for by the fact that this animal is the only subject which can be compelled to perform exertion on a full stomach. Prof. Hutyra says chronic dilation of stomach may be a cause. He also says long, spasmodic coughs, prolonged, labored expiration and inspiration, any condition where there is marked dyspnœa, horses take a long, deep breath before each cough, followed by pressure strain of the lung tissue. Stenosis of bronchi, tumors of same, older horses more frequently have because they are more subjected to hard work, malnutrition and feeding, defective, insufficient nutrition of the lung tissue. Diseases of heart and blood vessels of lung, resistance of lung tissue. Individuals, variations; no other explanation why one animal becomes diseased in a relatively short time while other horses under identical conditions either remain sound or become diseased much later on or in a very slight degree.



Hutyra says the reduced resistance of the lung tissue may be either acquired or congenital. Bonley quotes that he saw a two-year-old colt with a very bad case of broken wind, and the dam of this colt suffered from broken wind also; that would look as though it might be classed along with the hereditary diseases. Conformation, round-chested and largely developed digestive organs has been said to be a predisposing cause of emphysema. Overdue exertion, whatever may be its cause, might lead to emphysema. I saw a case of acute interlobular emphysema; the symptoms were great dyspnoea, painful, harsh cough, frothy discharge from the nostrils mixed with blood; lived eighteen hours. Post mortem showed both lungs emphysematous; previous history showed nothing the matter with the respiration. A good test if you are suspicious of heaves is to give horse all hay and water he wants and see him next day. If there is anything wrong with the respiration it will be readily noticed. Atmospheric changes will to a more or less degree affect a horse suffering from broken wind. There is a marked improvement or aggravation, the changes from conditions hardly differing from normal, and which serviceability is scarcely impaired to such as to render the horse absolutely useless for the time being. Such conditions are often met with. Stables should be kept in as sanitary condition as possible, as bad hygienic surroundings might be stated as a cause.

Concerning broken wind as a disease of setting aside a contract or sale, I cannot find any work that gives any information from the legal standpoint in this country. As to setting aside a contract or sale in regards to development of heaves within a certain time if purchased, such is considered in Bavaria, Wurtemberg, Grand Duchy of Baden, Saxony, Austria, Switzerland and Duchy of Brunswick. I must confess I have examined horses that have in a comparatively short time showed distinctive symptoms of heaves. It is not an uncommon occurrence for a veterinarian to be called as an expert to give an opinion in regard to heaves. If there were some stated time as the above countries have settled upon, it would prevent differences of opinions. We

know old-fashioned heaves is a disease of some standing, and I think right here is an opportune time to get various views and come to some specified time.

#### TREATMENT.

This is more palliative than curative, and thorough knowledge of feeding is very essential; the natural tendency is persistent aggravation by judicious regimen. Many cases may be checked in their progress or even cured. It has been mentioned what turning out to pasture when grass is green, short and succulent will do in relieving the dyspnœa.

A limited supply of water will enable heavy horses to do ordinary work with comparative ease and comfort. Why this is so is due to the empty condition of the digestive organs. If a bronchitis is associated, that being relieved, good results will come forth. Great care should be given to the condition of the feeds. Many farmers' horses are affected with broken wind due to the fact that they sell the best quality and feed the inferior to their own horses. Baled hay in many cases may lead to trouble due to the way it is pressed. Anything and everything is sometimes put in during pressing to increase its weight or to sell worthless stuff at hay market prices. Now, for this reason, owners of horses who cannot feed anything but such hay should see to it that the product is well looked over before feeding. Dr. Law says to moisten it with some saccharine agent as molasses will be helpful. Arsenic is a remedy which has been used as early as the first century of the Christian era. *Grindelia robusta* fluid extract is a very good agent. The virtue is, no doubt, due to its action on the bronchi; in relieving the chronic irritation, it will check the cough, if not entirely stop it. Hutyra in his latest edition mentions a combination of drugs which is called Bergotinine, a French preparation that is well worthy of trial. I have seen great results from its use. It is purchased through Pasteur Laboratories. Its only fault is, it is expensive.

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Unscrupulous dealers do not hesitate to avail themselves of a variety of devices to conceal the symptoms of broken wind so

as to deceive the novice, and some of them are so shrewd that they make it rather unpleasant for a veterinarian in an examination of soundness. But the veterinarian, being conversant with their methods whereby such conditions can be produced, he can take the precaution to ward off any scheme they have in view, much to his credit and the chagrin of the dealer.

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AN OUTBREAK OF HOG CHOLERA IN CANADA.—“For at least six weeks the most serious outbreak of hog cholera that has developed in the Canadian West has been rapidly spreading in the vicinity of Winnipeg, and for a great part of this time without the authorities being notified. Even now that the extent of the disease is known, little co-operation is given Dr. C. D. McGilvray in his efforts to bring this outbreak under control.

Perhaps a great deal of this apathy on the part of the farmers is due to lack of knowledge of the seriousness of this disease and of the government regulations concerning it. In passing, it may be well to note that it is one of the most contagious and fatal diseases among live stock, scarcely ever attacking a piggery but what ninety to one hundred per cent. of the hogs become affected with fatal results.

Already within the affected area hundreds of hogs have died or have been slaughtered in an endeavor to stamp out the disease, and yet partly due to the wet weather and the indifference of the farmers the disease is still spreading. To those in the vicinity of the affected area it may also be well to note that under the Health of Animals Act of the Dominion of Canada any one who harbors any animal having a contagious disease—among which is hog cholera—without notifying the proper authorities, is liable to prosecution. Now, while the authorities have shown every consideration to the farmers in this respect owing to the disease not being well known, it may be necessary to use more stringent methods unless those in the vicinity of the outbreak show a greater interest in assisting to control the disease. \* \* \*”—  
(*Farmer's Advocate—Winnipeg.*)



## INFECTED FLEXOR TENDON SHEATHS AND BURSAE OF THE HIND LIMB.\*

BY R. W. GANNETT, D.V.M., BROOKLYN, N. Y.

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There are several flexor tendon sheaths and synovial bursae on the horse's hind limb which occasionally become the seat of acute purulent synovitis.

The navicular bursa interposed between the fan-shaped termination of the flexor pedis perforans tendon and the navicular bone is most frequently involved. Next the sesamoid sheath, extending from the lower fourth of the canon to the heel through which glide the tendons of both flexors of the foot.

At the hock, where the two flexors of the foot have a separate synovial apparatus, is the sheath of the flexor pedis perforans tendon extending from a level with the summit of the os calcis through the groove on the inside of the hock to the upper third of the metatarsus. Also the bursa of the flexor pedis perforatus tendon which facilitates the gliding of the tendon upon the point of the hock. This bursa extends from the lower fourth of the tibia to about three inches below the summit of the os calcis.

A deep punctured wound at the frog is the usual cause of infection in the navicular bursa. The condition is most successfully treated by the operation of resection of the flexor pedis perforans tendon by which diseased tissue is removed and disinfection made possible, but, more than that, absolute rest is secured for the parts involved. The tendon no longer glides painfully over the navicular bone, and though only a portion of the navicular bursa is removed, no more purulent synovia is discharged. Healing is rapid and recovery to usefulness assured.

Acute purulent synovitis of the sesamoid sheath occurs as a result of wounds and as a complication in local infections of

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\* Presented at Twenty-second Annual Meeting, New York State Veterinary Medical Society, Brooklyn, September, 1911.

the fetlock and pastern. I must confess that we have had but little success in treating this condition. We have persevered with antiseptic irrigation and daily injections of tincture of iodine. In one case the perforatus tendon was slit on its median line from the ankle to the heel. In another we followed Bier's treatment by elastic ligature. As a last resort on a horse still in the hospital we performed tenotomy of both flexor tendons at the cannon. The animal has improved considerably. The synovial discharge has decreased and he is placing considerable weight upon the limb, but the outcome is uncertain.\*

Out of a total of about twelve cases we have seen but one recovery which took place after a table operation by which the sheath was laid open on each side at the ankle. The wounds were thoroughly irrigated with antiseptics; an iodine seton was also inserted through the sheath and left in place eight days. Lameness, which had never been severe, gradually subsided and recovery was complete in six weeks. I am not prepared to say what can be accomplished by tenotomy in treating purulent synovitis in this sheath if performed early. The subject of our single attempt was already in a critical condition when tenotomy was performed.

Acute purulent synovitis of the sheath of the perforans tendon at the hock sometimes follows kicks and other injuries. It also occurs as a complication in local purulent infections. Prognosis under ordinary treatment is unfavorable. I believe, however, that in tenotomy combined with drainage and the usual antiseptic treatment we have a method that promises some degree of success. I mentioned the fact that after resection of the plantar aponeurosis although only a portion of the navicular bursa is removed, there is no longer purulent synovial discharge because friction upon the remaining synovial membrane is eliminated.

The same principle applies at the hock. When the tarsal sheath of the flexor pedis perforans tendon is open and infected,

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\* A secondary abscess formed directly in front of the fetlock and terminated in an open metatarso-phalangeal articulation. The horse was destroyed.

there is a constant discharge of purulent synovia and severe lameness. If we perform tenotomy of the tendon involved, the toe will turn up slightly, but in our experience much more weight will be placed upon the limb. The synovial discharge will gradually cease and become more purulent in character and recovery will follow with drainage and antiseptic treatment.

Our first experience along this line occurred about four years ago. On January 4, 1907, a bay horse was sent to the hospital in an ambulance. The animal hopped on three legs. The entire hock was badly swollen, but showed no external wound. Temperature was  $104^{\circ}$ . After saturating the hock continually with antiseptics for a week, a blister was applied, after which the patient's condition became so bad that we obtained the owner's consent to have the animal destroyed. As an experiment, however, he was secured upon the operating table with the diseased limb next the table. The sheath was slit open for about five inches and a large quantity of purulent synovia escaped. Relief was immediate, but we now had a gaping wound on the inside of the hock. It was interesting to watch the tendon gliding up and down in its groove, but because of this motion and the synovial discharge the wound refused to heal. As a last resort, tenotomy was performed at the operative wound, and about four inches of tendon was removed; consequently this tendon never united, but an uneventful recovery followed. The patient was discharged March 4 and was soon hauling coal, showing no lameness, but a certain lack of control of the foot when advancing the limb. For purulent synovitis of the tarsal sheath we would perform tenotomy early, at the middle of the canon, away from the infected area, instead of within the drainage wounds at the hock. In this way perfect rest is secured for the structures involved and the divided tendon eventually unites.

The bursa of the superficial or flexor pedis perforatus at the hock becomes infected occasionally as a result of injuries. Sometimes lameness is not severe and recovery occurs under antiseptic treatment; at other times the condition becomes serious because when the entire sheath is filled with purulent synovia

it is difficult to provide adequate drainage for the constant secretion. This sheath must not be slit open at the summit of the os calcis, as in so doing one of the lateral branches is severed; the tendon will then slip off the point of the hock and the case becomes hopeless.

A heavy draft horse was kicked June 1 just above the seat of curb. There was soon a copious discharge of purulent synovia. The original wound was enlarged, syringed thoroughly and bandaged. The horse was tied short and the dressing kept saturated with a 1-1,000 solution of bichloride of mercury. This treatment being continued for one week with no improvement, the patient was sent to the hospital in an ambulance and dressed daily for another week. He was now in a serious condition, very lame and rapidly losing flesh. Temperature 103° F. We decided to perform an experimental operation. The patient was given a full dose of chloral and secured upon the operating table. Tenotomy of the flexor pedis perforatus tendon was performed in the middle of the canon, drainage being provided by inserting a large seton the entire length of the sheath. An uneventful recovery followed. In four weeks the animal walked home, a distance of five miles, and in seven weeks was moving soundly at a trot.

We have had an insufficient number of cases of like nature to warrant positive conclusions as to the efficiency of this method, but thus far our results have been very encouraging.

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DR. RAYMOND C. REID, Elmira, N. Y., has been appointed Professor of Veterinary Science and Bacteriology in the Delaware State College.

DR. HARRY H. HAVENER, Corrydon, Ia., graduate of the Division of Veterinary Science, Iowa State College, has been appointed Assistant Professor of Animal Husbandry and Veterinary Science at the Veterinary Department of the University of Pennsylvania.

## SAND AND CINDERS IN HOG LIVERS.

By A. T. KINSLEY, M.Sc., D.V.S., KANSAS CITY, MO.

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It is not unusual to find various foreign substances in the stomach or intestines of cattle, goats, sheep and hogs, and in some localities it is not uncommon to find accumulations of sand and vegetable fibre in the digestive tube of the horse. The accumulation and retention of particles of mineral matter in the lung tissue and related lymph nodes is rather common in animals that are used in cement works, coal mines, street sweeping and other like occupations. It is rather unusual, however, to find quantities of foreign material in the liver.

Several hog livers have been observed that contained quantities of sand or cinders varying from 30 c.c. (1 ounce) to 1,000 c.c. (1 quart). These cases have all been observed in hogs killed in abattoirs, and without exception the animals were in prime condition.

The gall bladder is located on the posterior surface of the liver, being attached to the right central lobe. The hepatic duct emerges from the portal fissure and joins with the duct leading from the gall bladder (cystic duct) at an acute angle. At the junction of the hepatic and cystic ducts, the common bile duct (ductus choledochus) has its origin, and it continues posteriorly and slightly to the right, terminating in the papilla duodeni about  $1\frac{1}{2}$  inches from the pylorus. The duodenal papilla is a hollow conical elevation of the duodenal mucosa having a small opening at the summit through which the bile is discharged. All of the larger efferent bile vessels, *i. e.*, the hepatic, cystic and common bile duct are lined with simple columnar epithelium, with an occasional goblet cell which rests upon an elastic basement membrane outside of which is a submucosa, and this in turn is surrounded by an irregular circular layer of involuntary



muscular tissue. Encircling the muscular layer is a fibrous and serous tunic. In the cystic duct a spiral valve due to an irregular folding of the mucous membrane has been described by some authors.

The secretion of bile is practically continuous, but it is, according to most physiologists, discharged periodically, at least in animals having a gall bladder. The discharge of bile is effected through the action of the muscular tissue of the bile ducts and gall bladder and the relation of the sphincter muscle located at the base of the duodenal papilla. The bile secreted during the interval between the periods of discharge is accumulated not only in the gall bladder, but also in the bile duct, and, further, it is possible that reverse peristalsis may occur in the common bile duct, thus overcoming the resistance of the spiral valve and forcing the bile that had accumulated in the common bile duct into the gall bladder. It is supposed that the hepatic duct has a more resistant valvular arrangement, thus preventing a reflux of bile into it, at least until the gall bladder and common bile duct are gorged to a sufficient extent to overcome the resistance of the valve in the hepatic duct, after which bile may be forced back through the biliary tubes in the liver, the reabsorption of which is the common cause of icterus.

Hogs, generally speaking, consume foreign substances of most every description, and they have frequently been observed to ingest enormous quantities of sand, cinders or coal whenever opportunity permits. The source of the sand and cinders in the livers examined was no doubt through the bile ducts. In every case the common bile duct was found gorged with the foreign material, the duct in some instances being more than one inch in diameter; the cystic duct and gall bladder were found to contain varying quantities of the foreign substances. In one instance the gall bladder was so engorged with sand that it had dilated until it was fully as large as a quart measure. The hepatic duct was apparently the last invaded in all cases, though in many instances cinders and sand have been found in some of the smaller biliary tubules. The gross appearance of the

affected liver necessarily varies according to the quantity of foreign substance accumulated. The bile duct, and frequently the biliary tubules, are dilated and their walls atrophied; in many instances a fibrous tunic of variable thickness alone encases the foreign substance. The accumulated mass in the bile ducts and gall bladder has obstructed the outflow of bile and thus there is icterus of varying intensity. There is usually some catarrhal disturbance of the mucous membrane of the duodenum.

Just how the foreign substances gain entrance and "back tells" in the bile tubes has not been determined. The orifice in the summit of the duodenal papilla probably becomes enlarged through injury or atrophy of the surrounding mucosa, and this, in conjunction with a full stomach and more or less full intestine, would facilitate the passage of sand through the orifice and into the cavity of the papilla and possibly into the common bile duct. The accumulated sand or other foreign material probably becomes an irritant and the sphincter muscle relaxes, thus permitting the solid matter to pass on into the common bile duct. In the common bile duct reverse peristalsis would convey the foreign substance to the gall bladder. The large quantities accumulated in some cases could be accounted for only on the supposition that the affected hog had frequently consumed large quantities of foreign substances, and no doubt in such cases the papillary orifice becomes permanently enlarged and the sphincter destroyed or its action overcome so that the foreign material may reach the common bile duct with little resistance. It is difficult to understand why the peristalsis should become normal and force the foreign material out of the gall bladder, cystic and common bile ducts, and this is suggestive of the fact that there is disturbance of the nerve supply to the bile tubes and intestinal wall, and it is possible also that the entire cause of the accumulation of this material in the liver is due to some irregular action of the intestinal musculature.

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THE Terre Haute Veterinary College has registered about seventy-five freshmen this autumn.

## BOVOVACCINE.

BY DR. WILFRED LELLMANN, PROFESSOR AT THE NEW YORK UNIVERSITY.

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A few more facts about good results with the continued use of bovo vaccine at two farms may be of interest for professional men who have been using bovo vaccine for years with proper judgment and accuracy.

On those two farms, 125 calves have been vaccinated within the past seven years; none of these vaccinated animals has reacted so far on tuberculin test. It certainly speaks well for the method, as nobody, even antagonistic to bovo vaccine, could pretend that this has been merely a lucky coincidence, especially when I state that there had always been a larger or smaller percentage of tuberculin-reacting animals.

Of those vaccinated animals, 104 have been more or less under my personal observation, and a large number of these were vaccinated by myself.

I wish to emphasize again that bovo vaccine has been abused in a great many ways. Bovo vaccine should be used with proper judgment and painstaking accuracy. I am sorry to state that these two qualities lack in a great many practitioners; however, they are always ready to express their opinion and to make pretensions which stand on a positively shaky basis. Furthermore, there are many professional men who speak about bovo vaccine as to its value without having given the matter the slightest test. One can easily comprehend the possibility of bringing about the most dissenting opinions.

I feel sure that practitioners who have given bovo vaccine the proper test for a continued number of years, with proper judgment and care in all its details as to its use, will reap the benefit of it.

I repeat once more what I have stated time and again: In order to get good results from bovo-vaccine, we must always bear in our minds the following points when using bovo-vaccine:

1. Selecting perfectly healthy calves, not over 4 months old; from 3 weeks to 4 months is the best age.
2. Making the intravenous injection accurately and carefully in every regard, strictly covering the directions as to its use.
3. Keeping the vaccinated animals isolated from possibly infected ones, *i. e.*, those which showed doubtful reaction on tuberculin test, for at least a period of six months after vaccination.
4. Using good judgment as to the surrounding sanitary conditions. Much can be done in this regard by using common sense, without going through a great expense.
5. Vaccinating all the young stock which is kept on the grounds for either breeding or dairy purposes.

I know perfectly well that many dairymen and farmers, as well as practitioners, have not the energy and push to go about a thing with the necessary care, and it is due to that, more than anything else, that they give up sooner or later instead of sticking to it.

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DR. A. W. PFARR, Pittsburgh, Pa., has opened a new veterinary hospital and is doing considerable sanitary work.

DR. CHESTON M. HOSKINS (U. P., '11) is associated with his father, Dr. W. Horace Hoskins, in connection with the practice of the Philadelphia Veterinary Sanitarium at Nos. 3452-4 Ludlow street, Philadelphia.

DR. JAMES A. WAUGH, Pittsburgh, Pa., reports prevalence of cerebro-spinal meningitis or forage poisoning in city and country, in Western Pennsylvania. The doctor states that out of twenty cases which he saw, only one recovered.

"CAN you tell me where I can buy a horse?"

"I think Deacon Skinner has one to sell."

"What makes you think so?"

"I sold him one yesterday."—(*Rider and Driver.*)

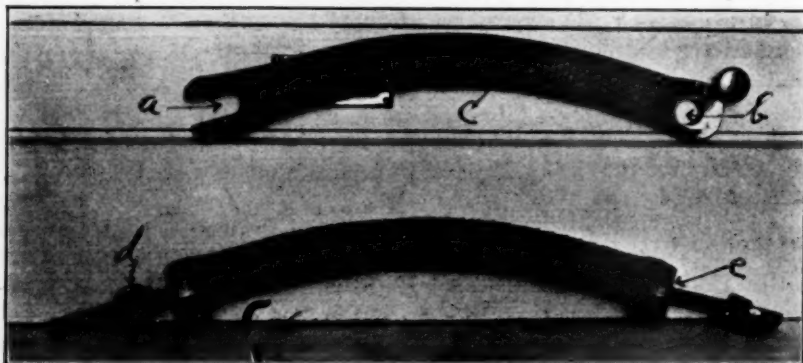
## REPORTS OF CASES.

### RADICAL OPERATION ON A CASE OF INFECTED UMBILICAL HERNIA.\*

By A. A. HERMANN, D.V.S., Littleton, Colo.

The patient was a percheron horse weighing 1,000 pounds. Age 18 months.

*History.*—Hernia was present at birth, and when six months of age was as large as a goose egg. An illegal practitioner insisted that it should be operated on. He cast the colt and proceeded to enlarge the hernial opening anteriorly and posteriorly to a length of about six inches. He said he did this so he could "get his hand in and sew outwardly." By accident the colt became unmanageable and had to be caught and recast. The exposed viscera were washed and replaced. Four sutures with num-



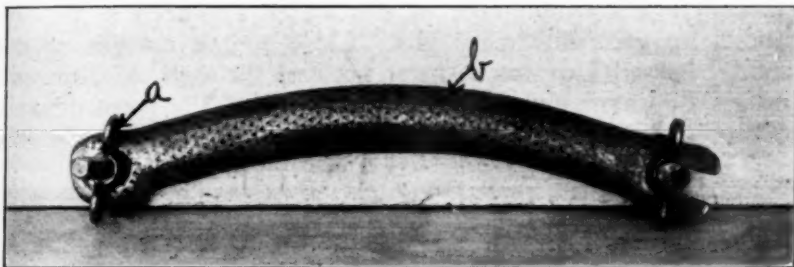
CUT 1.

ber six twisted silk were made to unite the margins of the tunica abdominalis. Five more sutures united the margins of the skin. The latter sutures soon sloughed leaving an elongated wound. The former, probably by inflammatory processes, tore through the one or the other side of the abdominal tunic and remained

\* Read before the Colorado State Veterinary Medical Association, June 3, 1911.



imbedded therein. The abdominal enlargement then became about the size of a child's head and presented, on its inferior aspect, four openings of fistulous tracts. The owner again called the imperic, who advised daily insertions of crystals of copper sulphate. For about nine months the owner persisted in this treatment. To no avail but to keep the colt in agony.



CUT 2.

I was called March 10, and examined the hernia and found that the lower portion was dense fibrous tissue and the upper portion was viscera. With pressure from below the entire mass could be forced up into the abdominal cavity.

March 12, colt was brought for operation and placed on a diet for two days to prepare him for the operation. Cultures were taken from the fistulæ and sent to Dr. B. F. Kaupp, pathologist of the Division of Veterinary Medicine, Colorado State College, for the purpose of making an autogenous vaccine.

Believing that sutures would be impractical I made an effort to secure a strong clamp at least eight inches long. Failing therein, I purchased two 10-inch half-round wood rasps and induced a blacksmith to try and make a clamp. The rounded surfaces were made smooth on an emery wheel (see b, cut 2). All work was done carefully to preserve the sharp teeth on the flat surface (see c, cut 1). A bolt was hinged on at each end of the rasps (see a, cut 3 and e, cut 1). One bolt passed through a circular hole in the opposite rasp (see b, cut 1), and the other bolt worked through a slot to permit a hinge movement of the clamp (see a, cut 1). Thumb screws made it easy to adjust and tighten (see d, cut 1, a, cut 2 and b, cut 3).

In preparing to operate the area was shaven, dried with alcohol, and painted with tincture of iodine. The colt was cast on a canvas, saturated with a solution of formaldehyde, and then an-

esthetized with chloroform. An oval skin incision three by five inches was made around the fistulous and fibrous mass, the underpart was dissected with the aid of a scalpel, curved scissors and numerous hemostats. It was swabbed continuously with adrenalin chloride solution. After the enlargement was removed *en masse* the opening through the peritoneum disclosed what appeared to be the point of the cæcum. The fistulæ in each case extended to a knotted piece of silk which appeared to be surrounded by greenish-cheesy pus. Close to the margin of the wound I passed four sterile meat skewers through the skin and through the tunica abdominalis, then across to the point directly opposite and in a similar manner forced the points from within



CUT 3.

to the exterior again. Above these skewers and by traction on the abdominal walls at either side I adjusted and tightened the clamp. Thus an oval opening four inches was closed with tissue to spare. The anesthetic was withdrawn and soon the colt was staggering about in its delirium which was perhaps, for the most part, due to the grain of cocaine applied locally to make the operation even less painful. Soon the colt found itself confronted by a high board fence having each board pointed-picket-like. In a moment the animal reared and plunged into the air, coming down upon the fence, here it hung a second or two, caught by the clamp and then, the fence being weaker, broke and released it. Luckily the position of the clamp was unchanged as the meat skewers were left in beneath it.

Next day, while I was attending another case, the colt showed signs of collapse, leaning against the barn and trembling. My wife hurriedly gave  $\frac{1}{2}$  grain strychnine hypodermically with 10 c.c. nuclein solution. No symptoms of peritonitis appeared and no further treatment was necessary. A week after operating the

clamp dropped off, leaving a smooth pink dry wound level with the belly line. A severe attack of strangles, which was treated with strangles vaccine made by Dr. Kaupp, has not retarded the healing of this wound left by the clamp.

Recovery was complete.

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### SOME INTERESTING CASES.

By GERALD E. GRIFFIN, Veterinarian, Third Field Artillery, U. S. Army,  
Fort Leavenworth, Kansas.

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#### LACERATION OF BLADDER.

A mare, bay, 15.1 hands, 16 years old, 1,000 pounds, brought to hospital with history that she had been straining and passing blood for nine days. She had, since yesterday, refused food and water.

Exploration revealed some hard substance in bladder. It was abstracted, a splinter of yellow pine  $8\frac{1}{2}$  inches long, about one inch thick, blunt at one end and pointed at the other. The blunt end was directed toward the neck of the bladder and had lodged itself in the mucus membrane to the right of the sphincter.

The pointed end directed itself to the vertex of the organ and had apparently penetrated the mucus membrane there. A considerable quantity of blood, pus and mucus membrane was discharged immediately after removal of foreign body. Anodynes and mild antiseptic washes were used. Patient appeared to improve for four days, although there was much sloughing of mucus membrane, and the temperature kept to  $103^{\circ}$  F. On fifth day after removal of foreign body patient did well and temperature subsided to  $102^{\circ}$  F. and remained there.

Immediately after dressing on morning of sixth day, animal lost control of right pelvic extremity, suffered with colicky pains and appeared in great distress that did not respond to hypodermic medicament. Patient died after three hours. The temperature previous to death being  $104.4^{\circ}$  F., pulse 87, respiration accelerated, mucus membranes (visible) highly congested, mouth hot and dry; while loss of muscular control had extended to left pelvic limb.

Post mortem revealed intense and extensive inflammation of entire fundus and vertex of bladder, right ureter, and right kid-

ney. There was observed a gangrenous patch on spot where blunt end of splinter had pressed. The pointed end of splintered stick had penetrated the mucus and muscular walls of vertex, leaving in the vicinity much inflammation, pus and broken down tissue.

The left ureter and the pelvis, and a portion of the parenchyma of left kidney showed evidence of inflammation. All of the other viscera appeared normal.

The degenerate who introduced the splinter was not discovered.

#### FRACTURE OF OCCIPITAL PROTUBERANCE.

A grey gelding, 16 hands, 8 years, 1,100 pounds, was brought to the hospital suffering with a stiff neck and two large swellings, one on each side of ligamentum nuche, immediately posterior to ears. Owner said that swelling on right side had persisted for 13 months. The one on left side had appeared about 3 months previous to visit.

He requested a cure. Animal would not permit a manual exploration until secured in stocks.

Ten inches posterior to occipital crest and exactly on the median line a decided depression was observed. On right of this depression and about four inches from ear a large, painful, fluctuating swelling was noticed. On the left side, in about the same relative position, a second painful, fluctuating but smaller swelling was exhibited. The animal resisted manual exploration.

On exploring, with the hand, the occipital region, the patient struggled so violently that the head rope of the stocks slipped forward and pressed so hard on the diseased parts that the left swelling ruptured and discharged about six ounces of pus, which was mixed with shreds of broken down tissue.

An incision was immediately made into the swelling on the right side and through its thick walls about four ounces of a semi-solid pus was evacuated; both cavities were now explored, cleansed and dressed.

There being no improvement after two weeks of temporizing and daily dressing, operation was decided upon.

On exposing the funicular portion of the nuche for ten inches nothing of a pathological character was discovered, except that the ligament appeared to be flacid. On moving anteriorly it was found that the entire occipital protuberance was loose from the bone. This was removed, the end of the ligament trimmed, the

ragged part of bone curetted, a drainage tube inserted anteriorly; parts sutured and dressed. Patient made a recovery in three weeks from date of operation.

The veterinarian is not justified in deferring operation on diseased poll or withers of long standing.

#### PARALYSIS OF TAIL.

Bay gelding, 15 hands, 14 years, reported to have suddenly lost power of using tail. Was all well preceding day, but this morning he couldn't use tail and was "groggy" behind.

No history of blow or fall or other injury.

After six weeks of various lines of treatment, tail remains paralyzed, "grogginess" disappeared early. On exploration externally and per rectum, a sensitive spot was discovered on sacrum near to portion where it articulates with the coccyx.

After four weeks it was learned that the horse, while being shod, was hit by the blacksmith with a rasp on "root of tail."

History received with army cases is usually unreliable.

No recovery in this case.

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### FOREIGN BODY IN THE PARANASAL SINUSES AND ITS OPERATIVE REMOVAL.

By FRANK T. KENELEY, V.S., Twin Falls, Idaho.

This case is reported because it has been somewhat of a surgical curiosity to me.

A four-year-old mare entered the hospital for treatment, very much emaciated and having an abundant, thick, viscid, discharge from both nostrils, and a swelling commencing at a point in front of the anterior end of the facial crest, extending upward and backward, involving the greater part of the external surfaces of the superior maxilla, nasal, molar and frontal bones. Percussing these respective sinuses showed an entire loss of resonance. An examination of the mouth with the aid of a speculum revealed a diseased fourth molar.

The owner said this animal had commenced to lose flesh four months previous, and about this time he noticed a light discharge from one nostril, closely followed by a swelling near the anterior end of the facial crest; only lately had he noticed a discharge from both nostrils.



The animal was placed on the operating table, the mouth speculum adjusted, and after preparing the operative field a three-quarter inch trephine opening was made one inch above the anterior end of the facial crest. After removing the circular plate of bone and arresting the hemorrhage, the sinus was explored for pus, but instead it was found firmly packed with masticated hay. Using the finger as a probe, search was made for the oblique septum dividing the two compartments of the maxillary sinus, but as far as the finger could reach nothing but hay was encountered.

A part of the hay was removed from the anterior compartment, the punch adjusted over the root of the fourth molar, and it was pushed out of the alveolus into the mouth in two sections. An examination of the tooth showed the central part missing, which had left an opening into the sinus, allowing the hay to pass up into it. After removing the small fragments of tooth in the alveolus, the sinus was explored to find the extent of the impacted hay, which was found to entirely fill the maxillary sinus. A second opening was made near the junction of the maxillary and frontal sinuses, and by the aid of a curved punch the impacted mass was pushed down toward the alveolus and a punch in the first opening directed it into the month; after removing the greater part of it this way, I found that the mass still extended above my last opening, necessitating a third opening into the frontal sinus, the interior of which was found filled with hay and pus. This was the first place I had encountered pus. The septum between the two sinuses was intact and percussing over the opposite sinus a clear resonance was evident and it was not opened. With a curved punch the mass of hay was slowly pushed into the mouth and the cavities flushed with a two per cent. solution of creolin, and the opening into the mouth closed with a cotton plug.

In dressing the cavities the following day, they were found free from any hay; they were irrigated with a two per cent. solution of creolin and all drained well except the frontal sinus. By the aid of a flexible probe a gauze seton was passed from the opening in the frontal sinus down through the opening over the fourth molar and the two ends tied over the side of the face, and it gave no more trouble as regards drainage; the wounds received daily irrigations and each time the opening into the mouth was plugged with cotton.

In addition to the above treatment the animal received the polyvalent-bacterin, the increasing dose ampules were used at four-day intervals. Two days after the first injection, the discharge was greatly increased in all the openings and after the second injection the nostrils had no indication of running pus, neither did they commence again during the healing process. The sinuses also contained less pus after the second injection and from this on the wounds healed quickly with very little discharge. The animal's general condition seemed greatly improved by the use of the bacterins.

The animal left the hospital sixteen days after the operation; the sinuses had all healed and there was only a small opening over the fourth molar into the mouth; her general condition had also greatly improved. By the use of the bacterin the healing process was made much shorter in this case.

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### INFECTIOUS ANEMIA?

By HORACE B. F. JERVIS, V.S., Houlton, Me.

In making this report I may say that I have nothing new to give upon this condition, but am in reality reporting it, hoping that by so doing I may get a little information from some of the REVIEW readers.

This case, owing to great distance, was only seen once, and no chance was had to do an autopsy. On September 15 I received a call from the owner of this mare asking me to come and attend a horse that was very sick. On arrival I found a mare, weighing about fourteen hundred pounds, nineteen years old, very emaciated, and on a casual examination showing a general condition of malaise. Temperature subnormal, pulse typically anæmic, visible mucous membranes of a dirty yellow color. The mare showed great weakness and staggered when made to move, and large oedematous swellings were present in dependant parts. The sphincters were all relaxed, the thermometer having to be placed well back in the rectum in order to register at all. Urination was constant and profuse, presumably from relaxation of cystic sphincter. The mare was eating as heartily as a well horse, in fact couldn't seem to get enough; completely cleaning up all that was put before her. She had a fine, vigorous sucking colt at her side.

The owner told me that two months previously he had lost a fine four-year-old colt, which exhibited just the same symptoms as this mare, and the disease ran a course just the same as this case. He said that in the event of his having any more of this, that he could with great ease diagnose it in the very early stages. The history that he gave was the following:

He first noticed a peculiar uneasiness, evinced by alternately resting first one hind leg and then the other. Next in order came quickened breathing, followed by polyuria, and in the case of the colt he lost, he was found dead in the pasture a month after the first symptoms were noticed.

This mare that I saw on September 15 was first noticed about August 20, and she died about September 30.

I happened to have my Thoma Zeiss with me and took some blood, and on arrival home made a count, the result being as follows: Red corpuscles, 3,000,000; leucocytes, 510.

I had a couple of slides with me and made smears. On undertaking to make a differential leucocytic count, I was surprised to find not a single leucocyte on either of my smears.

In regard to the red corpuscles, one found a typical picture under the microscope, viz.: microcytes, megalocytes, erythroblasts and poikilocytosis.

Having had no previous experience with infectious anæmia. I would be glad if some reader of the REVIEW who has would kindly tell me whether I am right in coming to such a conclusion in forming such a diagnosis?

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## A SERIOUS OUTBREAK OF ANTHRAX CHECKED BY STRICT QUARANTINE AND VACCINATION.

By Dr. W. W. YARD, State Veterinary Surgeon, Denver, Colo.

In the early part of July, four milk cows died suddenly upon the farm of a very rich mining man, situated in the Arkansas Valley. A young practitioner was called and could not decide the trouble; and upon autopsy, said it was some kind of forage poisoning. Most of the cattle on this farm were pure-breds. Deaths continued in both cattle and hogs until the owner, distracted, mentioned the fact to the local United States veterinarian, who made an examination and diagnosed anthrax; and then, on the 12th of August, notified me. We immediately

quarantined this farm, burned all carcasses and moved all stock to high pastures. While doing this, cattle on other farms began dying, the infection seeming to run east, the way of the Arkansas, until at last it had spread eleven miles, and, of course, necessitated the quarantining of each farm. I then employed a deputy sheriff, who rode this area from sunrise to sunset, seeing that whenever an animal having died reported, was burned. Warning signs were printed and tacked up on the highway, and all the cattle inoculated with the Pasteur anthrax vaccine twice, 12 days apart. After the second inoculation was made, the cattle ceased dying and none have died since August 28; although the disease promised to give us a very stubborn fight and was the severest outbreak ever seen in this state. One farm lost over \$6,000 worth of stock; but so effectual had the quarantine been, and the vaccination, that on September 22 I raised the quarantine on each farm whose cattle had been vaccinated properly; and with the ardent work of Dr. Stout, local Government veterinarian in this valley, the disease is to-day only a sad memory to those who suffered from it. But if Pasteur vaccine had not been discovered, a general outbreak could only have been the result of the vigor with which the disease spread.

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### A PROLIFIC COW.

By F. W. E. PENISTON, D.V.S., Smith's Parish, Bermuda.

On September 25 last, I was called to attend a Jersey cow that had given birth to triplets. In conversation with the owner, it transpired that she had given birth to triplets at the previous calving also, and was altogether a rather prolific cow. The first three times she had one calf each time, the fourth time she had twins, and the fifth and sixth times, triplets each time; making eleven calves in five years; eight of which were born in the last three years.

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THE Division of Veterinary Science, Colorado Agricultural College, has introduced into their clinic an X-ray. This is proving useful in examination of fractures of the bone in horses, dogs, etc., as well as in locating foreign bodies. The students are much interested in this new work.

## ABSTRACTS FROM EXCHANGES.

### ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CASE OF EQUINE TUBERCULOSIS [*W. Caudwell, F.R.C.V.S.*]  
—Unbroken draught filly has been grazing with others and was doing well when her breathing became abnormal and accelerated. Put in a box, it was difficult on account of her temper to make a minutious examination and her condition was diagnosed as one of pneumonia. She was put under treatment accordingly, but although she had fair appetite and received nourishing food, she lost flesh rapidly and died after about thirteen days of illness only.

At the post mortem the mesenteric lymphatic glands were enlarged and contained puriform fluid. Digestive canal nearly empty. Spleen had several yellowish nodules. Liver and kidneys healthy. Lungs enlarged, heavy with appearance of gray hepatization. Smears from the lungs, spleen and mesenteric glands examined under the microscope revealed large numbers of Koch's bacilli, establishing the tuberculous nature of the case, which was confirmed by Sir J. McFadyean.—(*Vet. Rec.*)

AN INDICATION IN STIFLE LAMENESS [*A. E. Bayley, M.R.C.V.S.*].—This is to call the attention to a peculiar position assumed by horses with lameness located in the stifle joint:

"It will be observed that there is knuckling of the fetlock joint, so much so that the end of the cannon bone very nearly rests upon the ground, and that the angle which normally exists at the flexure of the hock joint is nearly obliterated, causing the limb as a whole to approach the perpendicular. Once seen, one can readily differentiate this peculiarity from the perfect normal attitude, which it reminds one of, assumed by the horse when standing at ease; the chief difference being that in the latter position, the angle referred to, instead of being more obtuse, has become less than a right angle."



The record is illustrated by photo showing the above described position in a horse which was treated for lameness of the stifle by pyro-puncturing blister and long rest, with successful result.—(*Vet. Rec.*)

IMPACTION OF THE OVIDUCT IN A PIGEON—OPERATION—USEFUL RECOVERY [*A. W. Noel Pillers, F.R.C.V.S., and H. Thompson, M.R.C.V.S.*].—Valuable breeding flying homer hen was suffering with impaction of the oviduct due to an egg. Usual remedies have failed. The bird was carefully chloroformed and median laparotomy performed. Steady pressure was applied to the outside of the oviduct behind the egg, but as there seemed to be no prospect of succeeding in moving it, the dilated duct was incised longitudinally over the impaction and the egg popped out into the abdominal cavity and thus removed. The incised duct could not be found, so it had to be left as it was and the abdominal wound was closed with continuous suture. Recovery in some seven days. The bird since laid a normal egg.—(*Vet. News.*)

GRASS-SEED ABSCESES IN THE PHARYNGEAL AND SUBMAXILLARY REGIONS OF CATTLE [*Max Henry, M.R.C.V.S.*].—Cattle were reported as affected with manifest tuberculosis and were isolated. Four cows indeed showed evident thickening of the throat with localized enlargements of the pharyngeal and submaxillary regions. Those were considered as tubercular lymphatic glands. The cattle were in good condition. The swellings varied from a thickening of the skin to a round mass freely movable. Some had the aspect of a slowly maturing abscess. Their external appearance did not indicate either tubercular or actinomycotic enlargements. Punctured, they gave liquid thin pus of a dirty white color and having foetid odor. In the pus were grass seeds. Some of the animals had died, and the post mortem showed that the condition was caused by the sharp-pointed and barbed grass which through the mouth had pierced their way into the underlying tissues, causing suppuration.—(*Vet. News.*)

THE USE OF ADRENALIN IN THE TREATMENT OF LAMINITIS [*Lieut. R. F. Bett, A.V.C.*].—The record of two cases of this trouble which occurred in about similar conditions and presented identically the same symptoms. The treatment of one

consisted in taking the shoes off, allowed a laxative diet, gave aloetis purge and prescribed cold irrigations over both fore coronets. Half an hour with forced exercise was also given. Besides these, adrenalin was injected over the plantar region on either side of both forelegs, which were renewed the following day. Great improvement was manifested on the second day of treatment and recovery sufficient to allow work after a week laid up. The second case was treated exactly like the first with the exception of the injection of adrenalin. The result was that the recovery was very much shorter, but that several weeks were necessary before the horse could resume work.—(*Vet. News.*)

UNUSUAL FOETAL PRESENTATION [*Erin*].—A mare was delivered of a dead foal with the following strange presentation: Head protruding through the anus and the fore legs through the vulva. There had taken place a rupture of the posterior portion of the rectum, of the anus, the sphincters and together with complete obliteration of the septum between the rectum and anus and the vagina and vulva, with severe laceration of the vaginal walls. Feces dropped in the uterus. Case considered hopeless; mare slaughtered.

In another case the foal was alive. The presentation was similar; the head was returned in its normal position and the foal delivered without trouble. Rupture of the septum between rectum and vagina was found, nine inches long. After cleansing and irrigation, the wound was closed with continuous suture. Weak solution of chinosol was injected twice a day and sloppy diet allowed. Recovery was uneventful.—(*Vet. Rec.*)

RUPTURE OF THE DIAPHRAGM AND STRANGULATED DIAPHRAGMATIC HERNIA [*Lieut. H. A. Stewart, A.V.C.*].—A mule exhibits ordinary symptoms of colic. The temperature is 102.2° F.; pulse wiry. Has some borborygms. Aloes and chloral are given. Two hours later chloral has to be renewed as pains are persistent. The following day convalescence seems at hand except little anorexia remains, and mucous membranes are injected. On the evening of the day after, the mule lays down and in less than five minutes dies without a struggle. Post mortem revealed slight peritonitis, diffuse inflammation of the intra-abdominal viscera. In the muscular portion of the diaphragm on the right side there is a rupture six or seven inches

long through which protruded fourteen and a half feet of small intestines. This occupied the bulk of the thorax, was in condition of acute strangulation, and was empty. Both lungs were congested.—(*Vet. Journal.*)

IMPACTION OF THE INTESTINES—PASSAGE OF AN INTESTINAL CAST EIGHTEEN INCHES LONG [*Capt. A. J. Williams, F.R.C.V.S., A.V.C.*].—The detailed account of the case of a cob which was under treatment for colic. The case was very tedious, and for fourteen days there was practically no action of the bowels notwithstanding the repeated administration of aloes, eserine, linseed oil, chloride of barium—chloral, ether; morphine being also given to relieve the pains. Stimulating treatment was also resorted to, and finally on the morning of the fifteenth day there was found hanging from the rectum a dark, stringy mass about two feet long. This was a cast of the intestines in a gangrenous condition. About half an hour after more feces were passed, and from that time the animal began to improve. His progress was slow. During his convalescence he was taken suddenly lame in one of his forelegs (the off), but ultimately the recovery was perfect and the animal resumed his regular work.—(*Vet. Journ.*)

FRACTURE OF THE TIBIA [*W. Caudwell, F.R.C.V.S.*].—A nag mare being driven home slips badly and becomes suddenly very lame on the near hind leg. No evidence of pain is detected except in the hock, which has an old bone spavin. As the mare is advanced in foal, she is let loose in a box stall and hot fomentations prescribed. The next morning she has fracture of the tibia with displacement. On post mortem there was found a comminuted fracture extending across the grooves and malleoli and half way up the shaft of the bone. There was also an oblique fracture extending from the upper part of the ridge of the bone in an oblique direction downwards and backward, with some intermediate smaller fractures.—(*Ibid.*)

THREE CASES OF ABNORMAL RETENTION OF THE FOETUS [*By the same*].—In a first case, a Jersey cow was expected to calve a month before the writer saw her. As there was no indication that she was to deliver, she was put under observation, and it was only twelve weeks after the normal time of gestation had expired that the cow ejected two mummified foetuses in their membranes.

In the second case, a Jersey cow had been expected to calve three months previously. There was no indication that labor would set in, although she was straining severely. She was relieved by treatment. A week after she was covered and the same afternoon she expelled a mummified foetus, dead evidently since a long time.

In the third case, it was a mare which, while turned out in a meadow showed signs of foaling and soon gave birth to a fully developed dead foal. In the same meadow there was found the foetus of a small equine which had died apparently about the seventh or eighth month of gestation. It was supposed that the mare had given birth to both foetuses as she was the only pregnant mare on the farm.—(*Vet. Journal.*)

REMOVAL OF BOTH ABDOMINAL TESTICLES FROM A CRYPTORCHID THROUGH ONE INCISION [*Prof. F. Hobday, F.R.C. V.S.*].—Case of a cryptorchid colt in which it was possible to remove both testicles through only one incision made in the usual way. The removal was made without difficulty and by this method were the chances of wound infection so much reduced.—(*Ibid.*)

A CASE OF HODGKINS' DISEASE [*By the same*].—Small Japanese bitch had fits of weakness. The glands of the neck and behind the jaw were swollen but not painful. A month later the glands of the groin and axilla became swollen also and soon reached the size of a Barcelona nut. The diagnosis of Hodgkins' disease was made and the dog destroyed. The post mortem made by Sir John McFadyean confirmed the diagnosis.—(*Ibid.*)

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## FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FRACTURE OF THE TRACHEA—DIAPHRAGMATIC HERNIA—DEATH BY ASPHYXIA [*Mr. Floriot, Army Vet.*].—*Nikita*, a sixteen-year-old mare, has been suffering with roaring for a long time, but was still able to do her work until one day she was suddenly taken with an acute attack which threatened suffocation. At the base of the neck, on the anterior face, there is quite a large swelling, pressing against the entrance of the chest.

It has a tendency to invade the right jugular groove. It is very painful, not crepitating, and the slightest pressure on it promotes roaring. There is no mark of a wound on the skin, circulation is normal as well as the respiration when the animal is at rest. Walking brings out the roaring after a distance of twenty meters, and ten meters further the mare refuses to go on. The difficulty of breathing is very great, when the mare is very uneasy, scrapes the ground with her feet, the nostrils are widely dilated and soiled with bloody discharge, mouth is widely open, asphyxia is imminent. Ten minutes of rest bring comparative comfort. Placed on observation, *Nikita* has a bad spell one afternoon and dies.

*Post Mortem*—Subcutaneous tissue of the base of the neck is infiltrated. The trachea close to its entrance in the chest is wide and flattened. There are two rings fractured and the tracheal cavity is considerably reduced. There are lesions of dry pleurisy with adhesences. Lungs œdematous and congested. Heart hypertrophied. Diaphragm ruptured, with edges ecchymotic. Part of the intestines, stomach and liver protrude in the chest. Spleen is hypertrophied and weighs four times its normal weight.—(*Rec. and Med. Vet.*)

EMPYEMA OF THE SINUSES—ABSCCESS IN THE CRANIUM—DEATH [*Mr. Descascaux, Army Vet.*].—Fifteen years old, this horse has "strangles" with subglossal abscesses. Also sinusitis of the right side with chorea of the abdominal muscles. Returning from work, he is dull and in the evening has manifestations of chorea in the hind quarters. The gluteal and ischio-tibial muscles are the seat of frequent and repeated contractions. The tail is raised by jerks. These symptoms last for four or five days, disappear, and the animal is taken with immobility. These are complicated with difficulty of sight, which is explained by anhemia of the retina detected with the ophthalmoscope. After a treatment of the symptoms the horse dies in comatous condition.

*Post Mortem*—Abscess as big as the fist of a man in the right cerebral hemisphere. Situated in the right ethmoidal fossa, it spreads under the basilar groove to the annular protuberance. The walls of the abscess are bound by the body and right wing of the sphenoid, the right basis of the ethmoid, and the thickened infiltrated dura-mater. Lesions of acute meningitis are present. Sphenoidal sinuses are full of thick pus. Lesions of chronic



sinusitis exist in the right frontal and maxillary sinuses.—(*Rev. Vet. Milit.*)

**HUMERO-RADIAL DISLOCATION** [*Mr. Magnien, Army Vet.*]  
—Horse slips, falls with right fore leg in extreme abduction. He rises, but is totally disabled. He moves only by jumps, the left fore leg half flexed, touching the ground with the toe. There is a marked deformation at the elbow indicated by a depression under which is a marked projection. This is formed by the articular head of the radius pushed outwards, while the depression is due to a deviation inwards of the inferior extremity of the humerus. The movements of flexion and extension are very limited; those of abduction are more marked. All the manipulations are very painful. Diagnosis of humero-radial dislocation is made and attempts are made to reduce it, a subcutaneous injection of morphia 0 gr. 50 being made previously. The reduction is impossible; the horse is destroyed. *Autopsy*: The entire region of the elbow is infiltrated with blood, muscular serosity and synovia; muscles and their aponeurosis are torn. There are hæmorrhagic spots in the muscles. The humerus is pushed obliquely downwards and inwards. The synovial membrane is all torn. The lateral ligaments of the joints also. The extensors and flexors of the metacarpus and of the phalanges are also the seat of severe lesions in their superior insertions.—(*Rev. Vet. Milit.*)

**CRANIAN SYNOSTOSIS BY REPEATED BLOWS IN GOATS** [*Prof. Dechambre and Mr. F. Regnault*].—Two skulls of rams have in the middle of the forehead, with which they knocked each other, a large exostosis and synostosis which cannot be attributed to age, as both animals were young. The origin of this condition is traumatic and peculiarly interesting, as to this day the causes likely to bring on early synostosis of the cranium were still discussed.

The characters of these synostosis were very similar in both skulls. They occupied the medio-frontal, lacrymo-frontal, inter-nasal, fronto-nasal sutures, and besides in one of them the maxillo-nasal, fronto-parietal and parieto-occipital. All these synostosis involve only the external face of the sutures; the internal is intact. They are symmetrical and form narrow, bony bridges. The fronto-parietal and parieto-occipital are the only ones entirely ossified. In some points, the inter-nasal, fronto-

lacrymal and medio-frontal are united only in part and show some points free from bony growth. The synostosis are smooth, but in some places show some osteophytes. They do not influence the direction of the Haversian canals nor the form of the cranium.—(*Rev. de Path. Comp.*)

RECTAL PARTURITION [*A. Marcais*].—A cow, seven months pregnant, shows all the symptoms of early parturition. Examination reveals stenosis of the os which resists all attempts to forced dilatation. The next day the animal is quiet, eats, ruminates and makes no more expulsive efforts; the calf is, however, well felt through the neck. As the animal is insured, observation is indicated. Seen now and then the cow only exhibits symptoms of mild metritis. After two months she has new pains and makes violent expulsive efforts. After examination of vagina, the arm is withdrawn covered with feces. The hand is then introduced in the rectum, and at 30 centimeters from the anus one of the branches of the lower maxillary is felt. When this is extracted, an opening wide enough to allow the introduction of the hand is detected and through which, one by one, every bone of the skeleton of the calf was extracted. The uterus was well emptied. The cow made a fair recovery.—(*Prag. Vet.*)

ABNORMALITIES IN THE POSITION OF A COLT IN UTERINE HORNS [*Mr. Ricordeau*].—Mare is in labor. In examining the genitals, the writer found on the left in front of the anterior diameter of the pelvis and downwards, a mass which he took for a melanotic growth. Examining further on in the uterus, a piece of the placenta is found but no foetus. Careful feeling reveals that the mass already detected is movable and made of feet of the foetus. Exploration on the right side gives the sensation of a similar mass. Extra-uterine gestation is suspected, and after consultation the case is pronounced incurable and slaughter advised. When killed, as the abdomen is opened, the uterus appears containing its foetus. The body of the little fellow is in the body of the uterus, but its fore legs and head are in the right cornua, while the posterior legs are in the left. The legs are in pairs, held at the bottom of the cornua, and it was these that made the two masses found at the exploration made by the writer. The case was a sterno-abdominal transversal presentation. In opening the uterus, the foetus was found

covered with its envelope, emphysematous, and with an infectious odor.—(*Presse Vet.*)

**PROLAPSUS UTERI—INVAGINATION OF ONE OF THE HORNS**—**POSSIBILITY OF THE REDUCTION** [*Mr. A. Dumaus*].—Cow has delivered her calf and has prolapsus. The uterus is completely turned out and the placenta is still adherent. The delivery is removed and the uterus returned to its place, when of a sudden the animal makes violent expulsive efforts again, and in an instant the condition is worse than ever. Thinking that at the first reduction the uterus had not returned entirely in its normal condition and supposing the possibility of the invagination of one of the horns, the writer tried to find this out, but on account of the efforts of the animal he had to give it up. He then pushed with a funnel into the cavity of the uterus, after having reduced it again; injection with as much tepid water as possible was made, with hope to unfold the horn suspected of invagination. This treatment failed and the cow had to be slaughtered. The autopsy revealed the invaginated condition of the right cornua.—(*Presse Vet.*)

**VESICAL LITHIASIS IN A SLUT** [*Mr. Douville*].—A small toy terrier slut aged eight years has never been sick. Three days before her death she became dull, listless and vomited. Gastric trouble was suspected and treated accordingly. The next day the condition is worse; the animal will keep nothing on her stomach and seems paralyzed, yet the general functions seem normal and the thermometer shows no elevation of temperature. Examination of the abdomen by palpation reveals the presence of a mass, quite large, whose nature was not yet made out, and the animal dies next day in a comatous condition. At the post mortem the pseudo tumor proved to be the bladder, as big as an orange and formed of four calculi of unequal size. The largest two had a pyramidal form with rounded angles and smooth surfaces; the others were rough. They weighed together 65 grammes. There were no other lesions. Such size for calculi in so small an animal is rather rare.—(*Bullet. de la Soc. Cent.*)

**GENERALIZED MELANOTIC SARCOMA** [*Capt. Darmagnac and Lieut. Pincon, Army Vet.*].—Seventeen-year-old white stallion had under the tail several melanotic granulations, painless and

without specific characters. One day one of these, about the size of a nut, becomes soft, fluctuating and ulcerated. The discharge was similar to that observed in the opening of such tumors. The tumor, however, grows larger, and is covered with ready-bleeding granulations. The general condition of the animal grows worse. Loss of flesh is accentuated and the cancerous degeneration is indicated by the apparition of another neoplasm as big as an egg in the left inguinal region. Section of the growth examined under the microscope shows its sarcomatous nature. The animal is incurable and destroyed. *Lesions:* On the base and superior face of the tail there were two melanomas as big as the thumb, and with these the primitive ulcerated tumor formed of granulations, cauliflower-like, appears covered with yellowish, ichorous discharge. The lymphatic glands of the left leg, inguinal, superficial and deep are the seat of cancerous nodules. Those of the pelvis, iliac and sub-lumbar regions also. The left kidney and its super-renal capsula, the spleen, the lungs, are also the seat of tumors of various shapes.—(*Rev. Gener. de Med. Vet.*)

**SUPPURATIVE ORCHITIS AND EPIDIDYMITIS IN A HORSE** [*Mr. Lecomte, Student*].—A five-year-old stallion has a large swelling of the scrotal region. It is puffy, not apparently painful. The general condition is good. Simple œdema is diagnosed and astringent applications are prescribed. The second day the case is worse. Appetite is gone, the animal looks dull, the temperature is up to  $40.1^{\circ}$  C. The swelling is now hot and painful. The animal in walking holds his left leg in abduction and the slightest pressure gives rise to manifestations of great pain. At the urinary miatus there are a few drops of pus. No fluctuation is detected. Suppurative orchitis is diagnosed and castration indicated. After uncovering the testicle of its envelope, through an incision of the efferent canal, a tube is introduced and one litre of oxygenated water injected in the canal and through the urethra. The testicle was then removed. The next day the temperature is down, appetite returns and recovery completed in eleven days. A section of the testicle showed the presence of three abscesses, which, being in communication with the seminiferous canals, poured their purulent collection into the spermatic tracts. The history of the case did not permit to say if the lesion was the result of an ascending infection or if it only originated from traumatism of the testicular region.—(*Rev. Vet.*)

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## OBITUARY.

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### JAMES H. KELLY, V.S.

Dr. James H. Kelly died at his home in New Haven, Sunday, October 1, 1911, in his fifty-fourth year, a victim of that horrible malady, glanders, after fifteen days of suffering, during most of which time he fully realized his condition and knew there was scarcely a fighting chance for life. In fact, it is believed he diagnosed his own case, and went to the physicians, his personal friends, with the facts. But even with this knowledge they were helpless, and despite every effort that they could put forth and all the scientific knowledge they could summon to their aid, the brave patient at last surrendered and met the end with a calm courage and confidence that will always be a sacred memory to those who were near and dear to him. Dr. Kelly was born in Waterbury, Conn., on December 25, 1857 (Christmas Day), and lived there until he was nineteen years old, when he went to New Haven in 1876, and had made that city his home ever since. He was deeply interested in sports of all kinds, and was for a number of years well known as a baseball umpire for the Western League, and as a polo enthusiast. He was an athlete, and up to the day his illness began, by a swelling in the region of the knee, was in perfect physical condition and did not look his age by ten years. Dr. Kelly was graduated from the New York College of Veterinary Surgeons in 1893 and had practiced his profession in New Haven ever since. He was veterinarian to the fire and street departments of New Haven and had a large clientele in his private practice. He was a member of the American Veterinary Medical Association, and of the Connecticut Veterinary Medical Association, having held, at one time or another, nearly every office in the latter society.

The members of the American Veterinary Medical Association who attended its meeting in New Haven in 1906 will remember Dr. Kelly as the genial, active member of the local com-



mittee who looked after the entertainment and took care of the ladies in attendance. The line of carriages drawn up before the hotel headquarters to take the ladies to the points of interest in and around the "Elm City" is a sweet memory to many members of the association of the days when the horse was still an essential in the program of entertainment at A. V. M. A. conventions.

Dr. Kelly's death has been a terrific blow to the veterinary profession in Connecticut, and one that it will take them a long time to recover from. Men of his princely character are all too few, and his state will miss him sorely. He was always in attendance at the state association meetings, where his counsel was often sought and cheerfully given. Unostentatious, cheerful, optimistic, his happy, smiling countenance and his hearty handshake will be sadly missed at its future gatherings.

Dr. Kelly was a man whose charity was of the finest quality. He seemed to know when and how to give so as to do the most good, and not let his beneficiaries feel that they were in any way objects of charity. He will be missed not alone by the profession in his city and state, but by every one whose privilege it was to know him, for he was as true as steel and a friend worth having and was loved by everyone.

He was a member of the Protective Order of Elks, having been a district deputy of the state, and last year served as Grand Esteemed Leading Knight of the national body.

The high esteem in which our departed brother was held by his associates and townsmen may be gauged when it is noted that the leading state and city officials attended the funeral services to pay their last tributes to his memory. Thirty-six members of the Connecticut Veterinary Medical Association attended his funeral. It required eighty carriages for the delegations of visiting Elks; one hundred and eighty-seven carriages in all being required to carry the mourners, it being said to be the largest funeral cortege ever seen in New Haven.

He is survived by three sisters, Mrs. James McCarthy, Mrs. Mary Farrell and Mrs. Charles Barnes, the last-named having made her home with him for a number of years.

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#### JOHN OLIVER GEORGE, A.B., A.M., D.V.S.

Dr. John Oliver George died at his home in Camden, N. J., of heart disease, about the middle of October, in his fiftieth

year. Dr. George was a graduate of the American Veterinary College, class of 1894. The doctor was a native of Pennsylvania, having been born in Northampton County. In his early years Dr. George was a regularly ordained minister, occupying pulpits in Central Pennsylvania; but after receiving his veterinary degree at the age of thirty-three years, he devoted himself to the practice of veterinary medicine, besides serving as food and drug inspector from 1901 to 1907. A number of the alumni of the American Veterinary College were present at the funeral services. Among the floral emblems was one from the "A. V. C. boys" of Philadelphia, and one from the Veterinary Medical Association of New Jersey. Dr. George is survived by a widow and one daughter.

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A WARNING is issued by the veterinary medicine department of the University of Wisconsin against the feeding of beets that have been frozen and thawed. Some little loss was reported last year by stockmen in that state which was traced to this source. In one instance frozen beets were boiled with grain and fed to hogs, producing death from paralysis of the heart. The danger from frosted second-growth sorghum has long been known and feared.—(*Breeder's Gazette*.)

HORSES IN FRANCE.—The French Government distributed last year 840,000 pounds as prizes at horse shows and otherwise in fostering the horse industry. The encouragement given horse-breeders in France takes the form of cash, and other prizes offered for stallions and breeding stock at shows and bounties to the owners of approved stallions standing for service at moderate fees. In addition to this the government maintains 3,500 well-bred stallions of its own which, last year, were bred to 150,935 mares. The approved stallions on which bounty was paid served 92,482 mares, making a total of 243,416 mares bred in France in one season under government supervision. France is more advanced than any nation in Europe in encouragement extended to horse-breeders.—(*The Live Stock Journal*.)

## BIBLIOGRAPHY.

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### VETERINARY BACTERIOLOGY.

**VETERINARY BACTERIOLOGY**, by Robert E. Buchanan, Ph.D., Professor of Bacteriology in the Iowa State College of Agriculture and Mechanic Arts, Division of Veterinary Medicine. Octavo of 516 pages, with 214 illustrations. Philadelphia and London, W. B. Saunders Company, 1911. Cloth, \$3.00.

The intention of the author has been not to prepare a textbook on pathology, but to deal with those topics that unquestionably lie within the province of bacteriology. The book is divided into six sections:

Section I. deals with the morphology, physiology and classification of bacteria.

Section II. The laboratory methods and technic.

Section III. Bacteria and the resistance of the animal body to disease. In this section immunity, antitoxin and related bodies, agglutination and precipitation, opsonins and phagocytosis are discussed in separate chapters in a very concise manner.

The chapter on anaphylaxis and hypersusceptibility is of especial interest to all working along the lines of serum therapy.

Section IV. contains the pathogenic micro-organisms exclusive of the protozoa, and discusses micro-organisms as a cause of disease. This chapter also contains a group system of classification of the pathogenic bacteria, which should prove valuable to the student and teacher.

Section V. deals exclusively with the pathogenic protozoa and contains up-to-date information on the structure and classification of the protozoa.

Section VI. discusses the infectious diseases in which the specific cause is not certainly known. The illustrations and photo-micrographs are numerous, well selected and uniformly good.

While it is essentially a book for the veterinary student, it will, however, be found of much value to the busy practitioners, who will find within its pages correct information dealing with a branch of veterinary medicine that is advancing with rapid strides. There is a full and complete discussion of the nature

of toxins, of the origin of antitoxins, and of immunity to toxin, as well as agglutins, precipitins, phagocytosis and similar phenomena, all of which subjects are becoming of increasing practical application in veterinary medicine. Throughout the book much important information is given in comparatively few and simple words. The work represents the latest teaching along lines of bacteriological research and will surely prove a very useful book to the student, teacher, laboratory worker, and practitioner as well. It is a welcome addition to veterinary literature.

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### CORRESPONDENCE.

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FT. COLLINS, COLO., October 11, 1911.

*Editors of the AMERICAN VETERINARY REVIEW,*  
New York, N. Y.:

SIRS—I wish to correct an error on page 114, Vol. XL., No. 1, of the REVIEW.

The report of the Committee on Diseases of the forty-eighth annual meeting of the A. V. M. A. consisted of a chairman's report and five sectional reports. Each was prepared by a single member, so that the entire committee was not responsible for each part but just for what he prepared. The signatures of the committee should not have been appended to the report in question as shown on page 127.

Very sincerely yours,  
B. F. KAUPP.

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LOS ANGELES, CAL., October 4, 1911.

*Editors AMERICAN VETERINARY REVIEW:*

At the regular quarterly meeting of the Southern Auxiliary, California State Veterinary Medical Association, held at the Hollenbeck Hotel, this city, September 20, 1911, it was passed around the banquet board that our worthy member, Dr. Wm. Anderson, would on Monday, September 25, 1911, celebrate his golden wedding. So, when we came to new business, Dr. John Tyler's motion was unanimously carried (and then some), that our committee on resolutions draft suitable resolutions, com-

memorating that happy event, and forward the same to the Doctor and Mrs. Anderson at their home, 1280 West Thirty-eighth street, this city. We also had the pleasure of entertaining at our banquet and meeting their son, Dr. Chas. Anderson, of Yonkers, N. Y., who had crossed the continent to be present on that eventful day.

Yours truly,

J. A. DELL, Secretary.

WASHINGTON, D. C., September 12, 1911.

*Editors AMERICAN VETERINARY REVIEW, New York:*

SIRS—I am sending you under another cover a photograph of two beautiful silver pieces presented to me by the veterinarians of the United States Army, in appreciation of a little effort on my part looking to their future comfort and happiness.



Inasmuch as these generous brethren are scattered to the four winds, it will not be possible for them to see this bowl and coffee urn, hence I thought a photograph, made by Dr. C. M. Mansfield, of Washington, D. C., would reach all of them, should you see fit to publish it in the REVIEW.

Very truly yours,

J. P. TURNER.



## SOCIETY MEETINGS.

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### AMERICAN VETERINARY MEDICAL ASSOCIATION.

ATTENDANCE LIST, TORONTO, AUGUST, 1911.

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RHODE ISLAND—J. M. Armstrong, Charles T. Frey, John S. Pollard.

SOUTH DAKOTA—S. E. Cosford.

TENNESSEE—Charles J. Becker, J. W. Scheibler, George R. White, J. H. Gould.

VERMONT—C. D. McMurdo, F. A. Rich.

VIRGINIA—Patrick H. Hudgins, Nelson S. Mayo.

WEST VIRGINIA—H. B. Langdon.

WISCONSIN—W. G. Clark, F. B. Hadley, E. A. McCullough, F. W. Philp, J. W. Tooley, Thomas Wrigglesworth, L. A. Wright.

WASHINGTON—A. J. Damman, J. W. Kalkus, S. B. Nelson, W. E. Ralston.

WASHINGTON D. C.—D. E. Buckingham, Adolph Eichhorn, R. W. Hickman, A. D. Melvin, John R. Mohler, John P. Turner.

HAWAII—Victor A. Noorgaard.

#### CANADA.

MANITOBA—C. D. McGilvray, S. F. Martin, F. H. Richards, F. Torrance.

NEW BRUNSWICK—D. McCuaig, A. T. McLean, William Jakeman.

ONTARIO—John W. Groves, E. A. A. Grange, S. Hadwen, A. W. Harris, Charles H. Higgins, D. McAlpine, W. C. McGuire, A. E. Moore, J. G. Rutherford, J. H. Tennent, Thomas Thacker, John H. Wilson.

QUEBEC—A. A. Etienne, M. C. Baker.

SASKATCHEWAN—J. S. McIntyre.

#### *Visitors.*

CALIFORNIA—Master Baker Browning.

CONNECTICUT—J. S. Alford, Frank G. Atwood, Charles F. Roberts.

ILLINOIS—P. Barber, Ed. Beatty, I. E. Bill, J. F. Black, Wm. J. Cant, Joseph F. Dunn, Alex. Eger, A. J. Gibbons, N. W. Hillock, Master R. O. Hughes, Wm. A. Johnston, Howard L. Jones, W. J. Martin, H. P. Rasmussen, Joseph F. Pottinger, Robert Rives, C. P. Shaughnessy, T. D. Shearburn, A. W. Smith,

R. W. Story, E. B. Thomas, J. P. Thiry, B. F. Ward, W. B. Wise.

INDIANA—D. K. Buzzard, Ren C. Julien, J. D. McLeay, Emmett Davis, F. M. Hall, A. F. Nelson, W. A. Salmon, Master L. Salmon, G. O. Smith, A. H. Stewart, H. G. White.

IOWA—G. R. Beavers, H. E. Bemis, C. A. Bradley, I. B. Edwards, W. A. Kippen, S. A. Deming, Wm. Readhead, C. W. Reed, Ed. Viers.

KANSAS—A. J. Smith.

KENTUCKY—E. S. Good, Robert Graham.

LOUISIANA—N. S. Dougherty.

MARYLAND—J. Huebschmann.

MASSACHUSETTS—Frederick H. Bradley, W. J. Hennessy, W. J. Meloche, H. E. Paige, Roger N. Perry, Dwight Pierce, W. T. Pugh, J. H. Seale, Jesse A. Viles, C. J. Williams, R. T. Williams.

MICHIGAN—G. B. Cask, Edwin B. Cavell, D. Canning, C. C. Dauber, R. Elgar, N. S. Ferry, Walter Gohn, Wm. Hansen, Wilford A. Haynes, J. Hawkins, W. J. Johnson, T. F. Krey, D. H. McChesney, R. W. MacDonald, John M. Miller, E. E. Patterson, C. C. Petty, A. B. Sexmith.

MISSISSIPPI—J. F. Kennedy.

MISSOURI—L. S. Backus, Albert S. Kinsley, W. E. Martin, O. J. Phillyn, R. P. Poage, Frederick W. Shaffer.

NEW JERSEY—John H. Nunn, Thomas B. Rogers, H. G. Black, B. M. Hance, George W. Smith, E. B. Barnes, H. K. Aiken, L. L. Bishop.

NEW YORK—P. Burns, F. E. McClelland, W. A. Cole, J. A. McCrank, E. E. Dooling, F. D. Fordham, O. B. French, Hiram T. Gaetz, A. George Tegg, L. W. Ham, R. E. Healey, N. P. Hinkley, E. B. Ingalls, Wm. Henry Kelly, Jr., Capt. Wm. F. Kirchner, J. MacDonald, Edward Rafter, K. A. Shaul, W. B. Smith, Garry T. Stone, C. R. Webber, J. Whytock, Joseph L. Wilder.

NORTH CAROLINA—W. G. Chrisman, F. S. Charter, A. C. Janes, L. F. Koonce.

NORTH DAKOTA—J. W. E. Bryans, R. H. Treacy.

OHIO—James F. Barnes, H. F. Beer, Glen Biddle, E. H. Callander, Henry A. Corsant, E. M. DeTray, Norton Dock, B. C. Eldredge, W. C. Fair, C. W. Fogle, H. Fulstow, B. W. Groff, R. D. Heller, E. O. Hess, Robert C. Hill, S. R. Howard, C. E. Inskeep, J. H. Jefferson, F. W. Johnston, T. E. Jones, M.

McClain, W. O. McGuigan, H. M. Manley, O. F. Nugent, H. B. Roop, George L. Schneider, L. A. Severcool, Z. W. Seibert, C. N. Turner, W. H. Turner, B. F. Wingard, W. F. Wise, E. C. Wisman.

PENNSYLVANIA—E. G. Britton, S. E. Bruner, Edward A. Cahill, A. B. Cole, John O. Eyman, C. R. Good, J. B. Irons, R. L. Kann, J. Rein Keelor, John J. Kehoe, George Magee, J. F. Meredith, K. F. Meyer, F. B. Miller, J. F. Olweiler, H. F. Pegan, R. W. Phelan, N. Rechtenwald, F. N. Sherrick, George D. Sherrick, C. Z. Solberger, William T. Webb, Wm. M. Wilson.

RHODE ISLAND—L. T. Dunn.

TENNESSEE—J. W. Scheibler, Jr.

WEST VIRGINIA—J. C. Callander.

WISCONSIN—A. H. Hartwig, H. E. Hensel, A. A. Moody, Mazyck P. Ravenel, Clinton Wray.

#### CANADA.

MANITOBA—H. Bradshaw, Will A. Hilliard, W. R. Taylor.

NOVA SCOTIA—Harry Jakeman.

ONTARIO—Robert Barnes, J. E. Bennett, J. H. Black, H. O. Bond, P. T. Bowlby, A. S. Brodie, B. F. Butler, R. Arthur Byer, J. A. Campbell, W. Cavan, F. Chalk, W. A. Clapp, S. R. Craver, Wm. Dann, Henry A. Eckert, L. H. Eckert, F. C. Evans, W. J. R. Fowler, W. D. Forsyth, George Hilton, J. B. Hollingworth, C. L. Hurd, J. C. Jenkins, W. D. MacCormack, John A. MacDonald, J. F. McGregor, David McGill, John MacBride, C. S. MacDonald, G. G. Mauser, W. N. Middleton, John N. Pringle, A. R. B. Richenbach, J. Martin Rice, H. H. Ross, S. C. Rudd, C. G. Saunders, Frank W. Schofield, C. Shain, H. B. Sills, W. W. Stark, D. C. Tennent, A. M. Van Cleaf, L. A. Willson, R. E. Willis, W. J. Wilson, W. C. Young.

SASKATCHEWAN—J. A. Armstrong, A. A. Lockhart, J. J. Murison, S. S. Smiley.

#### ENGLAND.

Frederick Hobday, F.R.C.V.S.

#### *Lady Visitors.*

CALIFORNIA—Mrs. P. H. Browning.

CONNECTICUT—Mrs. V. M. Knapp.

DISTRICT OF COLUMBIA—Mrs. D. E. Buckingham, Mrs. J. P. Turner.



ILLINOIS—Mrs. I. E. Bill, Mrs. C. G. Glendenning, Mrs. H. D. Paxson, Mrs. Wm. J. Cant, Mrs. E. L. Quitman, Mrs. W. A. J. Gibbons, Mrs. A. G. Gieske, Miss Pauline Rives, Mrs. Robert Rives, Mrs. H. D. Chamberlain, Mrs. D. P. Rickards, Mrs. Herbert F. Palmer, Miss Josephine K. Hughes, Miss R. A. Murphy, Miss Helen M. Hughes, Mrs. Joseph Hughes, Mrs. G. B. McKillip, Mrs. Cassius Way, Miss Ruby Kays, Miss Myrtle Pray, Mrs. A. W. Smith, Mrs. Almira M. Ryan.

INDIANA—Mrs. F. A. Bolser, Mrs. Mary R. Ferling, Miss Rose Ferling, Miss Edna Ferling, Mrs. W. A. Salmon, Mrs. O. G. Whitestine, Mrs. J. W. Klotz, Miss Agnes Klotz, Miss Maud Lowther, Mrs. T. M. Hall, Miss Marion E. Craig, Mrs. J. D. McLeay, Miss Margaret Mueller, Mrs. A. V. Johnson, Mrs. A. B. Niven Mrs. O. L. Boor, Miss Mabel McLeay, Miss M. Barnes, Mrs. G. W. Butler, Mrs. W. J. Armour, Mrs. C. J. Fleming.

IOWA—Mrs. Grace L. Bemis, Mrs. A. S. Brodie, Mrs. J. W. Edwards, Mrs. E. Z. S. Giser, Mrs. G. A. Johnson, Mrs. W. A. Kippen, Mrs. P. Malcolm, Mrs. George A. Scott, Mrs. Wm. Readhead, Mrs. C. W. Reed, Mrs. T. D. Shearburn, Mrs. O. J. Phillyn, Mrs. C. H. Stange, Mrs. C. A. Stewart.

KANSAS—Mrs. George F. Babb, Mrs. Charles H. Jewell, Mrs. F. S. Schoenleber, Miss May Still, Mrs. Mary Still.

KENTUCKY—Mrs. C. A. Miller, Miss Verling, Mrs. Young.

LOUISIANA—Mrs. N. S. Dougherty, Mrs. Don. Houston.

MARYLAND—Mrs. Dickinson Gorsuch, Mrs. J. Huebschmann, Mrs. F. H. Mackie, Mrs. C. P. Wilson.

MASSACHUSETTS—Mrs. Francis Abele and two children, Mrs. J. G. Cruikshank, Mrs. Daniel Emerson, Miss L. A. Higgins, Mrs. H. Lukes, Miss Ruth Lukes, Mrs. Charles H. Perry, Mrs. Harrie W. Pierce, Mrs. Ben. Pierce, Mrs. N. T. Pugh, Mrs. W. M. Simpson, Mrs. J. H. Seale, Miss Eva O. Webster, Mrs. C. J. Williams, Mrs. J. Winchester.

MICHIGAN—Mrs. F. M. Blatchford, Mrs. S. Brenton, Mrs. J. S. Donald, Mrs. Geo. W. Dunphy, Miss Gaylor, Mrs. J. Hart, Mrs. Thos. Farmer, Mrs. James Garman, Mrs. G. D. Gibson, Mrs. H. M. Gohn, Mrs. R. W. MacDonald, Mrs. E. E. Patterson, Mrs. C. C. Petty, Mrs. U. S. Springer, Mrs. A. B. Sexmith, Mrs. J. E. Wurm.

MISSISSIPPI—Mrs. Tait Butler, Miss Seta Butler.

MINNESOTA—Mrs. Charles E. Cotton, Mrs. G. Ed. Leech

MISSOURI—Miss Ruth Jensen, Mrs. A. T. Kinsley, Mrs. R.

C. Moore, Mrs. R. P. Poage, Miss Guanetta Stewart, Mrs. S. L. Stewart, Mrs. C. H. Speers, Mrs. J. S. Zeiler.

NEW JERSEY—Mrs. Bryam Smith, Mrs. H. G. Black, Mrs. George W. Smith, Mrs. John B. Hopper, Mrs. J. H. Nunn, Mrs. Bertha G. Vleit, Miss Wenda Runge.

NEW YORK—Mrs. Roscoe R. Bell, Mrs. George H. Berns, Miss Nellie C. Berns, Mrs. L. L. Bishop, Mrs. Wilson Huff, Mrs. Gertrude Huff Gihby, Miss Delilah Higby, Miss Minnie Wales, Mrs. Robert W. Ellis, Mrs. H. J. Milks, Mrs. Hiram T. Gaetz, Miss A. Pullman, Mrs. L. R. Weber, Mrs. C. R. Weber, Mrs. J. L. Wilder, Mrs. V. A. Moore, Miss Mary E. Moore, Mrs. W. G. Hollingworth, Miss Hannah Hollingworth, Mrs. Wm. H. Kelly, Miss E. M. Fish, Miss Rosina MacDonald, Miss C. H. Faust, Miss Anna Loebenstein, Miss Charlotte W. Hunt, Mrs. W. L. Williams, Mrs. Edward Rafter, Mrs. C. R. Perkins, Mrs. W. B. Smith.

NORTH CAROLINA—Mrs. A. C. Jones.

NORTH DAKOTA—Miss J. A. Bryans, Mrs. J. W. Robinson, Mrs. L. Van Es, Miss Matye Van Es, Mrs. E. J. Walsh.

OHIO—Mrs. E. H. Callander, Mrs. E. Jones, Miss J. Jones, Mrs. M. McClain, Mrs. Paul Fischer, Mrs. L. A. Severcool, Mrs. A. J. Kline, Mrs. E. O. Hess, Mrs. Z. W. Seibert, Mrs. E. H. Shepard, Mrs. H. F. Beer, Miss Ruby Wingard, Mrs. R. C. Eldredge, Miss Mattie Myers, Mrs. Turner, Miss Iva Sander-son, Mrs. Washburn, Mrs. Walter Howard, Miss Mary J. Murray, Miss Lora E. Murray, Mrs. W. J. Spears, Mrs. E. M. DeTray, Mrs. W. F. Wise, Mrs. R. D. Heller, Mrs. M. E. Cliffe, Miss Helen Cliffe, Mrs. J. D. Fair, Miss Ada M. Gregg, Mrs. B. W. Groff, Mrs. J. H. McNeil, Mrs. L. M. Manley, Mrs. W. H. Redhead, Mrs. E. C. Wisman, Miss Edith Wisman.

PENNSYLVANIA—Mrs. C. J. Marshall, Mrs. E. C. Dingley, Mrs. F. H. Schneider, Mrs. W. Horace Hoskins, Miss Margaret E. Hoskins, Mrs. David McKibbin, Jr., Mrs. William H. Ridge, Mrs. W. Albertson Haines, Mrs. Edgar W. Powell, Miss Margaret Barry, Mrs. R. C. Gross, Mrs. Wm. M. Wilson, Mrs. Robert Gladfelter, Mrs. Alexander Glass, Miss Bessie Glass, Mrs. J. P. Stover, Mrs. G. A. Dick, Mrs. Mary A. Sallade, Miss Katie M. Sallade, Mrs. F. H. McCarthy, Mrs. William T. Webb, Mrs. Walter G. Huyett, Mrs. Thomas Kelly, Mrs. R. M. Phelan, Mrs. C. R. Good, Mrs. Martha S. Helmer, Miss H. McLaughlin, Miss Ellen Sherrick, Miss Grace Solberger, Miss Ida F. Solberger, Mrs. E. C. Porter, Mrs. Eymen, Mrs. Mary E. Sherrick, Mrs. W. Wight, Mrs. F. B. Miller.

RHODE ISLAND—Mrs. L. T. Dunn, Mrs. John S. Pollard.  
 TENNESSEE—Mrs. C. J. Becker, Mrs. Ida A. Scheibler.  
 WASHINGTON—Mrs. S. B. Nelson.  
 WEST VIRGINIA—Mrs. J. C. Callander.  
 WISCONSIN—Mrs. C. A. Carter, Mrs. W. G. Clark, Mrs. Fred Lambert, Miss M. E. Tooley.

## CANADA.

BRITISH COLUMBIA—Mrs. L. Stewart.  
 MANITOBA—Miss Lillian Stewart, Mrs. W. R. Taylor, Mrs. S. T. Martin, Miss Minnie E. Bradshaw.  
 NEW BRUNSWICK—Mrs. D. McCuaig.  
 ONTARIO—Mrs. R. H. Higgins, Mrs. Wm. Dann, Miss Ada Jermyn, Mrs. James Cruikshank, Mrs. John Riesberry, Mrs. H. B. Sills, Mrs. H. W. Smith, Miss Carrie Looe, Miss Pearl Looe, Mrs. H. A. Middleton, Mrs. J. H. Tennent, Miss Winifred Hollingworth, Mrs. J. B. Hollingworth, Mrs. A. E. Moore, Mrs. R. Gamble, Mrs. W. A. Harris, Miss A. Eagle, Miss Josephine Hamilton, Mrs. H. H. Ross, Miss E. M. Tooley, Miss F. N. Tooley, Miss L. Cooper, Mrs. Samuel Lukes, Mrs. David McGill, Miss Irene Glendenning, Miss Annie Butler, Mrs. E. A. Butler, Mrs. B. F. Butler, Miss Johnston, Mrs. J. W. Groves, Miss Brodie, Miss Lizzie Jenkins, Mrs. H. Coleman, Mrs. Belle Clement, Miss D. Groves, Mrs. C. S. MacDonald.  
 QUEBEC—Mrs. A. A. Etienne, Mrs. Anna Ryan, Miss May Stewart.  
 SASKATCHEWAN—Mrs. Armstrong, Miss Pearl Armstrong, Miss Armstrong, Miss Pearl Farrell.

## CLINIC—OPERATIONS AND RESULTS.

Through the courtesy of Prof. W. J. R. Fowler, of the Ontario Veterinary College, we are able to fulfill our promise to our readers (made in our October issue), to give them a report of the clinic, including the condition of each subject operated upon to date as follows:

Case I.—*Laryngeal hemiplegia* in chestnut gelding. Operator, Prof. F. Hobday. Patient apparently doing well. Has been turned into loose box and will be allowed to run until December. Wound healed by granulation. The animal did not suffer from operation.

Case II.—*Laryngeal hemiplegia* in chestnut mare. Operator, Prof. Hobday. Has also been running loose and will not be harnessed before December. Wound healed by granulation. Patient not inconvenienced by operation.

Case III.—*Laryngeal hemiplegia* in aged gelding. Operator, Prof. Hobday. Died following morning from asphyxiation.

Case IV.—*Poll-Evil*. Operator, Prof. L. A. Merillat. Patient was put to work September 26; wound not quite healed, but completely healed at this date. Very small cicatrix remains, which is hidden by mane.

Case V.—*Stringhalt*. Operator, Prof. L. A. Merillat. Animal made complete recovery and does not present any involuntary movement of limb. The healing of lower wound was tardy and left a marked thickening. Small cicatrix at superior incision.

Case VI.—*Cryptorchid*. Operator, Dr. Joseph W. Klotz. Patient removed to its own stable after clinic and made rapid recovery.

Case VII.—*Cunean tenotomy*. (Operator's name not obtained.) Results unfavorable, no relief being given to condition.

Cases VIII. and upward, consisted of a number of *canine operations*, with complete recoveries in each case.

#### COMMITTEES APPOINTED BY PRESIDENT BRENTON.

*Executive*.—Dr. E. H. Shepperd, Chairman; Dr. L. A. Merillat, Dr. S. B. Nelson, Dr. C. D. McGilvray, Dr. C. G. Lamb, Dr. E. B. Ackerman.

*Intelligence and Education*.—Dr. F. S. Schoenleber, Chairman; Dr. E. A. A. Grange, Dr. Geo. H. Glover, Dr. A. T. Kinsley, Dr. O. L. Boor.

*Legislation*.—Dr. W. H. Hoskins, Chairman; Dr. W. G. Hollingworth, Dr. F. H. Schneider, Dr. J. R. Mohler, Dr. Jas. Robertson.

*Diseases*.—Dr. J. R. Mohler, Chairman; Dr. C. H. Higgins, Dr. C. E. Cotton, Dr. Ward R. Giltner, Dr. S. H. Burnett.

*Finance*.—Dr. G. A. Johnson, Chairman; Dr. J. J. Joy, Dr. G. Ed. Leech, Dr. E. B. Ackerman, Dr. Thos. Thacker.

*Publication*.—Dr. R. P. Lyman, Chairman; Dr. R. W. Ellis, Dr. C. J. Marshall, Dr. Geo. B. McKillip.

*Necrology*.—Dr. W. H. Dalrymple, Chairman; Dr. A. T. Peters, Dr. B. F. Kaupp, Dr. Paul Juckiness.

## NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-second annual meeting of the above society was called to order by the president, Dr. E. B. Ackerman, at 10.30 a. m., September 12, 1911, at "The Imperial," Brooklyn, N. Y. President Ackerman then introduced Dr. Travis R. Maxfield, Assistant Sanitary Superintendent and Chief of the Brooklyn Division of the New York City Department of Health, who welcomed the society to Greater New York. The address of welcome was responded to by Dr. Robert W. Ellis, after which, Dr. Ackerman gave the president's address.

### PRESIDENT ACKERMAN'S ADDRESS.

Ladies and Gentlemen—As your presiding officer, I want to tell you how very much pleased I am to address you here in my home city—"The City of Churches and Homes."

I am somewhat disappointed at the rather small gathering or number in attendance at the opening of our session.

Unfortunately this is usually the case, as our members straggle in one by one, and the meeting warms up and grows as it proceeds and I have every reason to believe we will have a well filled meeting here. One of the causes of this light attendance at this time is our State Fair now in session at Syracuse, which calls a number of our members there on business and in business interests.

Howsoever, those of us who are here, are full of the spirit of the occasion and what we lack in numbers now, we will make up in interest and earnestness, so that when the late ones join us they will find us in full swing and that it has been their loss and not ours.

We have listened to the instructive address of welcome offered us by our friend, Dr. Maxfield, the Chief of our Department of Health for this Borough, and the brilliant response made by our associate, Dr. Ellis, and I am sure we all feel flattered and instructed by these pleasant and encouraging remarks. During the year your officers and the chairmen of the various committees, have worked in harmony, and the results of such work will show in their reports.

I have taken up the matters pertaining to our work under several heads so that we may have them in some order for future discussion.



## LEGISLATION.

Our legislation is unfortunately unfinished this year, as our legislators adjourned before passing or disposing of our bill, but they reconvene this month as an adjourned session when we hope to get some consideration.

In relation to our Veterinary Laws our Bill No. 528 has passed the Assembly and is still in the Committee on Public Health in the Senate. At this special session we hope to get it out and get favorable action upon it.

Unfortunately for us there was running simultaneously with our bill, another bill, No. 313, to open the doors of registration again, allowing all the unqualified men practicing here to become registered and legal practitioners.

Our educational wall is so securely built for an entrance into our colleges in this state, that it practically keeps out all students from adjoining states, and drives much good material of our own to other states for their education.

This being so, many of the nearby states and Canada, having veterinary colleges that do not require such high standards of education are turning out large numbers of graduates as compared to those we are sending out in the profession and they are locating and practicing here regardless of the law and our high standards, while our own men who have passed through *all the educational and legal requirements* of our state are *offered no protection* at all, and thus the unqualified man has every advantage.

This too is an imposition upon the public, for when a man hangs out his shingle, how is the public to know which is the qualified man and which is not, believing as it does, that when a man hangs out his shingle he does so, because the law says he is qualified.

Bill No. 528 is asked for, so that we can offer some protection to our graduates, and reach these illegal practitioners in an effective way. This law must *pass* and *prevail*, and this law to open the doors of registration again must be *defeated*.

No other profession in this state has ever gone backwards and again opened its doors to quackery and imposition, and we must not do so. It would be a black eye that would put us back twenty years at least.

I therefore believe that our colleges and our state department of education should join with us and ask the legislators to give our graduates this protection.

The chairman of the committee on legislation will give us a detailed report of this work, but I am going to ask you now, each individual qualified man, whether a member of this body or not, to make it his business to follow up this legislation, and see that his assemblyman or senator votes to pass this bill, and also votes to destroy the bill to legalize quacks.

We will have another bill to present at the next session of the assembly that is of great interest to our profession, and that is the "Stallion Service Bill," the history and facts of which will be presented to you for your action and consideration by the chairman of the committee having that subject in charge.

#### COLLEGES.

We have, as you know, two colleges in this state, one a private school struggling for existence under our impossible educational requirements, but which has in the past graduated many men that are now prominent in the profession and which is represented in more states, territories and countries than any other school, and is also probably represented in the faculty of many of our schools as teachers and professors. As I said before, this school is struggling for an existence. This year an effort was made through legislation to have the New York-American Veterinary College receive state recognition and support, but I am sorry to say although the bill passed both houses, it was vetoed by the governor. The reason for his vetoing this bill has not yet been made clear to me.

Our other school, located at Ithaca, N. Y., a department of Cornell University and a state institution, the N. Y. State Veterinary College, supported by state funds as well as university appropriations is a most excellent school, doing a magnificent work.

This school is constantly receiving state support in special appropriations, for instruction, equipment, buildings, etc., and also private donations for libraries, specimens, etc.

It also asked for a special appropriation from the legislators this year for additional buildings, which was fortunately granted, so that by another year they will have a magnificent building added to their already splendid equipment.

I am perfectly confident that these two classes of schools are necessary, as each school graduates a different character of man.

The State of New York gives free tuition to residents of this state, at Cornell, while the great majority of its students upon completing their course of studies so given, start either in the

Government service, or laboratory work in other states or colleges so that our state loses the value of these men who they have educated.

The vacancies by death or other causes, in our ranks yearly are being filled by the illegal practitioners or quacks, while if the private schools could live under reasonable educational requirements, we could fill many places where even in this state, there is a dearth of practical qualified men.

And after talking with men from all parts of North America at the last meeting of the American Veterinary Medical Association, at Toronto, I find that the west is still yearning for practitioners, not bacteriologists, microscopists, and laboratory specialists, but practitioners and field men, who really make up the backbone of our noble calling.

On our Canadian border is one of our old schools which is living up to all the requirements established by our American Veterinary Medical Association, and the regulations of our Bureau of Animal Industry, and which is turning out many good men who when they come to this state do so as illegal practitioners; yet we in this state, cannot begin to compete with this school for students on account of our excessive educational qualification already spoken of.

One of the signs of progress and advancement in our profession at our colleges is the formation of a Greek Letter Fraternity, "Alpha Psi," with chapters located in six different schools throughout the country, and this is bound to grow and develop and be productive of much good; it not only brings our men closer together, but it helps unite our educational institutions.

Personally I feel very much flattered because I have been elected an honorary member of Beta Chapter of Alpha Psi Fraternity.

I would also like to suggest that this body adopt in the form of a resolution the suggestion offered by Dr. Glover, ex-president of the A. V. M. A., that all colleges give a uniform degree, making in our suggestions or resolutions what that degree should be, and why.

While talking on the subject of legislation, I brought to your attention the high legal entrance requirements.

Our A. V. M. A. this year passed resolutions requiring all schools after 1913-14 to have as a standard of education for en-

trance into a veterinary college, one year in high school or its equivalent, and after 1918-19 two years or its equal.

This puts the standard in this state two years hence, four times as high as any other state, and seven years hence it will still be twice as high as any other school.

Our high standard that we reached by such rapid strides in such a short period of time has been almost equal to disbarment of veterinary students in this state. It has had the effect of almost closing the doors of one of our schools and very greatly reducing the attendance at the other where the tuition is free. It has absolutely and forever cut off students from adjoining states, and our few students which this state educates at state's expense are readily gobbled up by our National Government and other states and colleges; while our own state suffers from a dearth of practitioners of standing, and is filling up with quacks and illegal practitioners from other states and countries, to impose upon the innocent public. I therefore feel that while we all favor higher education, that ours is *too* high, and that we are practicing professional suicide by continuing along the unseasonable and unreasonable conditions we have established.

It is therefore, the recommendation of your presiding officer, that this meeting take up this subject of higher education and entrance requirements, and see if it would not be to our advantage to modify our laws and regulations, and while we need not fall to the low requirements asked for by many colleges as a standard to be set by our National Association, I do think that our own entrance requirements should not at this time be more than a 24-count or two years high school or its equivalent 1918-19, when all the other schools will reach this standard; then we, the Empire State, could move on, be in the lead, and in advance of all others by moving up our requirements; but in the meantime, it would still allow us to have a reasonable number of students and these same students would still from an educational standpoint be above the average.

This is the position I took in this matter when our education entrance requirements were raised by recommendation of this society in this state some five or six years ago, when our late Dr. Bell and myself put in a minority report on this subject, and we were beaten by two votes in a packed meeting in Buffalo.

While no one likes to go backward, it seems necessary at this time for our preservation to retrace our steps or retreat, as often

happens in business concerns, when they find that the means do not obtain the ends.

That, gentlemen, is what the veterinary profession in this state will have to do if we expect to even hold our own, and I trust that this meeting will take some action in this matter, so that our loss may be reduced sufficiently to allow us as a profession to live in our own state.

#### FEDERAL, STATE AND MUNICIPAL SANITARY MEASURES.

We all know to a greater or less extent what our National Bureau of Animal Industry is doing. Executive, laboratory, field work and meat inspection. What a vast number of veterinarians it employs all over the country. This work is growing more valuable and important each year; working out new problems in diagnostic and preventive medicine, it is a combination that has wonderful advantages to itself, and to the public at large, and last but not least, to our beloved profession.

It has its own men or employees located as meat inspectors, investigators, and men in the field who are constantly furnishing the laboratories and experimental departments with material, that help reach the results to be obtained that are so beneficial to all.

In addition to this, the members of the entire profession in the United States individually are furnishing material for this large scientific laboratory to work out.

#### STATE MEASURES.

Coupled with this each state has its own form of handling disease and in our own Empire State of New York, under the leadership and direction of Raymond A. Pearson, the Commissioner of Agriculture, our profession has had the consideration it deserved and has for the first time in a decade made some progress from the veterinarians' point of view.

There has been made an official Chief Veterinarian, who has in charge all the sanitary work relative to the contagious diseases in our animal industry within the state.

There has been appointed throughout the state from the civil service list as far as practicable, regular veterinary inspectors and appraisers to test cattle and horses for their individual contagious diseases; condemn, appraise and destroy them and look after the exposed horses and cows; to quarantine dogs for rabies where suspected, look after the transportation of animals, and the inspection of meat and dairy products.



Where the regular candidates for appointment to this work have been lacking in a county or in a city where the regular force was insufficient, the Commissioner has used his prerogative, and exercised his right to deputize the work to a regular and qualified veterinary practitioner; so that as far as possible, the work has been expedited to a great extent.

There is still much to be done along this line to thoroughly eradicate the disease known as glanders, especially in big cities where there is so much to contend with. Constant change of the ownership of horses, the loss of identity, the importation of diseased horses from adjoining states, the crowded condition of our city stables, the careless interchange of harness, nosebags, bedding, brushes and combs, and the common drinking trough in stables, and the public ones in the street, are all factors in propagating this disease.

The administration of the animal indemnity law from Albany so far from the centre of the worst infection, New York City makes its effectiveness that much less.

The lack of sufficient tests, both by the private veterinarian and our state officials, and a proper reporting and recording of those cases reacting, just help keep this disease progressing.

An illustration of what can be accomplished was shown by the report made by one of the veterinarians connected with the Canadian Veterinary General for Canada, in the Province of Manitoba, where in seven years, beginning in 1905, when 871 cases were killed for glanders, 365 of which were clinical cases and the rest killed upon the test. In 1906, 336 were killed, of which 173 were clinical cases. In 1907, 3,065 horses were tested, 199 were killed, 99 of which were clinical and the other hundred were killed upon the test alone, and so the report goes down, the clinical cases and reactors growing less each year until 1911 when 249 were tested and none reacted. Care was observed, however, beginning in 1907 to test every horse coming in the Province.

This shows in a small way what can be accomplished.

On the other hand, the horse that is tested, by any one, and reacts and is not reported, identified, quarantined or killed, becomes a dangerous source of infection and each time he is sold or changes ownership is liable to start a new centre of infection.

The Department of Agriculture, through its Veterinary Bureau, is undoubtedly doing all it can at present with the amount of money appropriated to its use for this purpose.

But the Government as well as the state and municipalities must sooner or later take hold of this proposition in earnest if we ever expect to exterminate it.

The Commissioner of Agriculture saw fit after a conference with a number of leading veterinarians throughout the state to co-operate the state law with the municipal ordinances of this city of New York, so that instead of two departments working at loggerheads, they are now reporting these cases officially to one another so that each may be cognizant of what the other is doing and seeing that none escape, thus insuring a better inspection and an improved condition of quarantining and disinfecting.

#### MUNICIPAL REGULATIONS.

Our local Department of Health in Greater New York is also interested in the contagious disease of animals, but from a different point of view; while our federal and state governments, through their Departments of Agriculture, are mainly interested in the contagious diseases of the animal kingdom from a protective point of the live stock interest and the capital invested, and to save and protect that interest and capital from the ravages of diseases, the Department of Health is interested from the fact that many of the contagious diseases of animals are communicable to man one way or another.

This department has always co-operated with the private practitioner and to his advantage, and is now co-operating with the Department of Agriculture as well.

It is principally interested in glanders and farcy in horses, in rabies in dogs, tuberculosis of cattle, and cattle transportation, in dairy and milk inspection, and a meat and food inspection.

That part of the work that relates to diseases of animals is carried on by veterinarians under a medical chief of a division of contagious diseases. They have been for the last five years much interested in the suppression of rabies and have been taking the hardest, longest and most expensive and unsatisfactory methods possible—the investigation of every dog that bites a person regardless of the cause.

A dairy and milk inspection done principally by laymen under the division looked after by a chemist, a meat and food inspection, whose destinies are controlled by a layman.

There has been, however, a movement on foot recently to appoint veterinarians for the regular meat inspection service at

our local slaughter houses displacing as opportunity offers professional inspectors for laymen.

The one great drawback this sanitary work suffers is the small compensation paid for this work, which requires greater diplomacy in dealing with the public, with more risk and danger from infection to the veterinarian and much more labor than professional work in other city departments which pays considerably more.

I hope to see the day when this work will be conducted from a "Veterinary Division" of this great Department of Health, looked after and conducted by a veterinarian of standing and merit, who will have green hand to take hold and master in our cities some of these veterinary problems.

#### VETERINARY SOCIETIES.

The old adage, "In Unity there is Strength," is fast becoming exemplified in this state from an association or society point of view, as our societies are growing in numbers and strength.

We have first, our own beloved New York State Veterinary Medical Society, then the Genesee Valley Veterinary Medical Association, the Central New York Veterinary Medical Association, the Alumni Association of the New York-American Veterinary College, and last but not least, our Veterinary Medical Association of New York City.

These are all aggressive and growing societies. What they lack in numbers they make up in enthusiasm, and add much to our profession as a whole, and much more to the individuals who are fortunate enough to live within ear-shot or traveling distances of their meetings, and take part in their deliberations.

A state that can brag of five healthy, harmonious veterinary societies is certainly in good shape, from a society standpoint.

We have for the first time this year had printed proceedings of our 1910 session, a copy of which you all have, or will receive upon your return home. This was recommended by my predecessor and carried through by resolution. It remains with you whether you will make this a permanent feature of our society or not, as it is rather an expensive procedure, but to my mind, it is worth it. We have prepared this time to have verbatim reports of all addresses, papers, discussions, etc., by employing in advance a stenographer, accustomed to our nomenclature, so that the report, if it is to be printed, will be complete this year. I personally believe as long as we can afford it, we

should continue this, as it makes an excellent reference book. A full report of this work will be given by the publication committee, which should, in my opinion, be continued in office for at least another year.

In closing my address, I can only repeat what I said when you honored me by making me your president, and that is "the president cannot be the whole society any more than the captain can be the whole ship." It all depends upon the co-operation of the members and other officers and I feel that I have had that in every particular. I felt then as I feel now, that there is no higher honor that one can aspire to, than to be president of this association.

I have endeavored to keep in touch with each member, each committee and each officer during the year, to keep my correspondence up to the day as near as possible, giving due consideration to each question and in turn, placing the facts before the proper committee for their action.

I give my most heartfelt thanks for the work and aid given by your retiring officers and committeemen and the conscientious efforts of them all.

You have selected your officers, and in turn your president selected the committees, the chairmen of which forms the executive committee. This was no easy task, and it took time, care and attention with the aid of the vice-president, who had been our secretary, and was therefore, conversant with the special qualities of the different men. These men have proved a most happy combination for the good of our beloved society.

We have again suffered loss in our midst during the year by the swath cut by the Great Reaper, to which we all as wheat spears must fall. This, too, will be fully taken up by the resolutions of our Committee on Necrology.

In order that our beloved society may prosper, we must interest the young men in the work we have been endeavoring to help, and they in turn will take our places, we hope, for the improvement and lasting good of our society. (Applause.)

After the reports of the various committees had been received and the various business matters of the society adjusted, the following papers were presented:

"Some Observations on the Use of Glanders Vaccine," by Dr. John McCartney; "Torsion of the Intestines," by Dr. J. N. Frost; "The Influence of Legislation Upon the Progress of Veterinary Science," by Dr. W. L. Williams; "Canine Distemper:

Experiments and Observations on the Various Forms of Treatment," by Dr. W. L. Curtis; "Tendo-Vaginitis," by Dr. R. W. Gannett; "Why Improvements of Stallion Service would be an Asset to New York State," by Dr. W. G. Hollingworth; "Formalin and Its Use Intravenously," by Dr. F. E. McClelland; "The Relation of the State Diagnosis Laboratory to the Practitioner," by Dr. V. A. Moore; "Sanitary Production of Milk," by Dr. G. T. Stone; "The Increasing Prevalence of Glanders in New York State," by Dr. J. G. Wills.

The various reports and papers were well prepared, instructive and invariably created interesting discussions.

Clinics were held each evening and the morning of the third day at the Berns Veterinary Hospital, 74 Adams street. At the close of the clinic Thursday afternoon, special cars were in waiting to carry the members, visitors and ladies to Coney Island, where a shore dinner was served. This brought to a close one of the best meetings in the history of the society.

The following officers were elected for the ensuing year:

President, Dr. J. F. DeVine, Goshen.

Vice-President, Dr. W. B. Switzer, Oswego.

Secretary-Treasurer, Dr. H. J. Milks, Ithaca.

It was voted to hold the next annual meeting at Utica.

H. J. MILKS, *Secretary*.

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## ONTARIO VETERINARY ASSOCIATION.

The annual meeting of the above association was held in Toronto on Tuesday, August 22, 1911.

The president, Dr. C. Brind, of Woodstock, opened the meeting at 2 o'clock p. m. In his short address, he explained that in consequence of the annual meeting of the American Veterinary Medical Association being held in Toronto this year, at the present time, it would be best to condense the business of our meeting as much as possible.

The order of business:

First—In accordance with this, it was moved, seconded and carried "That the minutes of the last meeting be approved without reading them.

Second—The secretary reported, a considerable amount of correspondence that had been promptly attended to, especially



several letters relating to unqualified men practising our profession in this Province. With regard to the finances, after paying to the estate of the late Dr. A. Smith the sum of \$50 for money advanced by him some time ago, there was now in his hands and in the Bank of Commerce the sum of \$74.53.

Third—The auditors' report was read by Dr. J. H. Reed. It was moved, seconded and carried that these reports be adopted as read.

Fourth—Mr. A. M. Van Cleaf, V.S., was duly proposed and accepted as a new member of the association.

Fifth—The payment of dues was then called for.

Sixth—No papers were read.

A resolution was carried "That the feelings of regret of the members of the association on the death of the late Professor Dr. Andrew Smith, which sad event occurred since our last annual meeting, should be placed on record, and the secretary was instructed to write a letter of condolence to Mrs. Smith expressing our deep sorrow for her bereavement.

The secretary was also instructed that a letter of condolence be sent to Mrs. Dr. W. Mole, our late vice-president, whose sudden death has only recently occurred.

Dr. C. Elliott, V.S., then brought forward the subject of better legal protection for our profession in the Province of Ontario. He mentioned the fact that this matter had been before the Provincial Legislature for several years, and he could not understand why our bill did not pass, as in private interviews with prominent men it received much encouragement. But it was finally withdrawn.

Dr. J. G. Rutherford, Veterinary Director General, spoke of conversing with members of the house on the bill. He also said that the Legislative Committee of our association met the Hon. Mr. Duff, Minister of Agriculture, on the matter, who gave encouragement.

Dr. Rutherford also stated that he had received a bill of \$500 from Col. Robertson, our lawyer, for his services in connection with the bill. He had therefore written to Col. Robertson and offered him a check for \$250, which was graciously accepted. He further stated that there was still something over \$400 in the Bank at Ottawa for this one purpose and no other, and he urges members of our association to "wake up" and interview their members of parliament continually until our demands are granted. He recommended interviewing the Hon. Mr. Duff, to keep him

alive to the passing of the bill. He claims that the veterinarians of Ontario should devote a certain amount of time and trouble in endeavoring to gain our point.

Dr. Hawkins, V.S., of Detroit, gave a short review of the work done by the Veterinary Association of the State of Michigan, and gave some useful advice as to the course to pursue regarding legislation, which had been so successful in that state.

There was considerable discussion in which several participated, and the feeling of the meeting was unanimous, strongly favoring pushing onward for better legal protection for our profession.

The retiring president, Dr. C. Brind, then vacated the chair in favor of Dr. W. Cowan, the president-elect.

Dr. W. Cowan on taking the chair, thanked the members warmly for the honor conferred, and said he hoped to do his duty as president, and also hoped to get protection for our profession during the coming years. He fully agreed with the remarks made by Dr. Hawkins.

Dr. J. G. Rutherford, on behalf of the American Veterinary Medical Association, invited all members to attend the meetings now in session at Convocation Hall, in this city.

A vote of thanks was tendered to Dr. Brind for his able conduct in the chair during his term of office. In response to which Dr. Brind made a few very appropriate remarks.

A vote of thanks was tendered to the Legislative Committee for the efforts they have made in endeavoring to procure better legal protection for our profession.

Dr. W. Cowan, the president-elect, then asked for the feeling of the meeting in regard to the time or date of our next meeting. This subject was fully discussed. Dr. Elliott, Dr. Rutherford, Dr. J. H. Reed and others taking part in discussing it. It was ultimately moved and carried that Dr. Fowler, Dr. Hurd and Dr. Wilson be appointed a committee to get into communication with the secretaries of the Live Stock Association, and to have a meeting during the week of their meeting.

The following are the officers elected for the ensuing year:

President, W. Cowan, V.S.

Vice-President, C. S. Macdonald, V.S.

Secretary-Treasurer, C. Heath Sweetapple, V.S.

Assistant Secretary-Treasurer, W. J. R. Fowler, V.S..

Directors—E. A. A. Grange, V.S.; C. S. Macdonald, V.S.; G. Coultlen, V.S.; C. Elliott, V.S.; W. Steele, V.S.; T. H. Lloyd, V.S.; T. E. Watson, V.S., and T. Babe, V.S.

Auditors—C. Elliott, V.S.; J. H. Reed, V.S.

Dr. E. A. A. Grange, principal of the Ontario Veterinary College, was appointed to represent the association at the Industrial Exhibition.

C. HEATH SWEETAPPLE, V.S., *Secretary*.

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#### UTAH VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Utah Veterinary Medical Association was held at Salt Lake, October 5, 1911.

Meeting called by Dr. J. H. Halton, president.

Election of new members, the following being taken in: Drs. Vance, Frederick, Egbert, Webb and Williams.

Discussion for schedule of prices; some changes made.

Quackery and unlawful practice taken up; association to work with state for the suppression of same.

Election of officers for following year: H. J. Frederick, president; Walter Emms, vice-president; A. J. Webb, secretary-treasurer.

A special meeting called for next March at Logan. Papers to be prepared and clinic to be held at next meeting.

Meeting adjourned.

A. J. WEBB, *Secretary*.

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#### SOCIETY OF COMPARATIVE MEDICINE OF THE NEW YORK STATE VETERINARY COLLEGE.

The first regular meeting of the above society was held Friday evening, October 6. The newly elected president, Mr. O. B. Webber, presided. The important feature of the meeting was a talk by Dr. V. A. Moore, director of the college, upon "The Meaning and Purpose of the Society of Comparative Medicine," in which he urged that every man registered in the college become a member, and that after graduation, he become a member of the local, state and national societies. This was followed by a social hour at which refreshments were served. At the close of the meeting Dr. Moore extended to the faculty and students a general invitation to his home Friday evening, October 13, 1911.

R. RAY BOLTON, *Corresponding Secretary*.

## VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.	.....	.....	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.	.....	.....	J. B. Arthur, Russellville.
Ass'n Médécalle Veterinaire Française "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. ea. mo.	Chicago.	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.	3d Mon. ea. mo.	So. Omaha, Neb.	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.	.....	Ottawa.	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.	June and Nov.	Syracuse.	W. B. Switzer, Oswego.
Chicago Veterinary Society.	2d Tues. ea. mo.	Chicago.	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.	Jan. 18-19, 1912.	Denver.	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.	Feb. 6, 1912.	Hartford.	B. K. Dow, Willimantic.
Essex Co. (N. J.) V. M. A.	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 21-22, 1911.	Atlanta.	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates.	Oct. 10-12, 1911.	Boise.	G. E. Noble, Boise.
Illinois State V. M. Ass'n.	Call of President	.....	L. A. Merrillat, Chicago.
Indiana Veterinary Association.	.....	.....	E. M. Bronson, Hartford City.
Iowa Veterinary Ass'n.	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n.	.....	.....	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.	Oct. & Feb. ea. yr.	Lexington.	Robert Graham, Lexington.
Keystone V. M. Ass'n.	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.	October, 1911.	Waterville.	C. W. Watson, Brunswick.
Maryland State Vet. Society.	.....	Baltimore.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	Monthly.	Boston.	J. H. Seale, Salem.
Michigan State V. M. Ass'n.	Feb. 6-8, 1912.	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n.	.....	.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n.	.....	.....	D. L. Luckey,
Montana State V. M. A.	.....	Helena.	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.	January, 1912.	Lincoln.	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.	September, 1912.	Utica.	H. J. Mills, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 1912.	Raleigh.	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.	Jan. 1912.	Agricul. Col.	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.	Feb. and Nov.	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.	.....	.....	O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med.	Annually.	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Dec. 14-15, 1911.	Okla. City.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	April, 1912.	Toronto.	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.	March, 1912.	Philadelphia.	John Reichel, Glenolden.
Philippine V. M. A.	Call of President	Manila.	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June.	Providence.	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville.
So. Illinois V. M. and Surg. A.	.....	.....	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	Dec. 20, 1911.	Reading.	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.	.....	Philadelphia.	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.	Jan. Apl. Jy. Oct.	Los Angeles.	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave.	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.	.....	.....	A. C. Topmiller, Murfreesboro.
Texas V. M. Ass'n.	Call Exec. Com.	St. P.-Minneap.	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.	2d Thu. ea. mo.	Logan.	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.	Mar., 1912.	.....	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n.	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.	.....	.....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.	3d Wed. ea. mo.	514-9th St., N. W.	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.	Not stated.	Winnipeg.	M. Page Smith, Wash., D. C.
Vet. Med. Ass'n of N. J.	.....	.....	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.	1st Wed. ea. mo.	141 W. 54th St.	W. Herbert Lowe, Paterson.
Veterinary Practitioners' Club.	Monthly.	Jersey City.	R. S. MacKellar, N. Y. City.
Virginia State V. M. Ass'n.	.....	.....	A. F. Mount, Jersey City.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman.	W. G. Chrisman, Raleigh.
Washington State V. M. A.	.....	Seattle.	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.	3d Thurs. ea. mo.	Pittsburgh.	J. T. Seely, Seattle.
Wisconsin Soc. Vet. Grad.	.....	.....	Benjamin Gunner, Sewickley.
York Co. (Pa.) V. M. A.	.....	.....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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THIS is the season when our attention is called to street conditions and the best manner in which to shoe our horses for comfort and safety. Nothing is superior to AIR-CUSHION PADS. Put them on your own driving horses and recommend them to your clients. For particulars, see lower half of page 13 (adv. dept.).

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THE Azoturia season is approaching; have you got a HORSE AMBULANCE? RECH-MARBAKER & Co., of Philadelphia, lead the world in that particular. You can obtain some valuable information on the horse ambulance question by writing them to the address you will find on page 7 (adv. dept.) of this issue.

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"AT THE FOUR CORNERS," *Serums, Vaccines, Bacterins, Diagnostics.* Not only at the four corners of page 11 (adv. dept.) of this issue of the REVIEW, but at the four corners of veterinary practice. Turn to that page, get the address of the SORBY VACCINE COMPANY, and write for particulars. It makes interesting and instructive reading.